WAR DEPARTMENT BASIC FIELD MANUAL

FM 21-75

SCOUTING, PATROLLING, AND SNIPING

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WAR DEPARTMENT,

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FM 21–75, Scouting, Patrolling, and Sniping, is published for the information and guidance of all concerned.

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(For explanation of symbols see FM 21–6.)

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TABLE OF CONTENTS

	Paragraphs	Page
PART ONE. SCOUTING.		
Chapter 1. General	1–4	1
Chapter 2. Scouting by day.		
Section I. Concealment	5–7	3
II. Movement	8–11	10
III. Reconnaissance	12	24
Chapter 3. Scouting by night.		
Section I. General	13–17	29
II. Concealment	18	31
III. Movement	19–25	31
Chapter 4. Maps and use of compass.		
Section I. Maps	26–30	44
II. Compass	31–34	56
Chapter 5. Observing and reporting.		
Section I. Observation	35–41	64
II. Reporting	42	71
Chapter 6. Operating procedure	43–48	75
Chapter 7. Exercises in scouting.		
Section I. Concealment	49–51	77
II. Individual movement by day	52–58	78
III. Scouting by night	59–61	80
IV. Map reading	62–65	82
V. The compass	66	83
VI. Observing	67–71	83
VII. Night vision	72–77	85
VIII. Messages	78	86

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PART TWO. PATROLLING.

	Paragraph	Page
Chapter 8. General	79–82	88
Chapter 9. Preparations.		
Section I. Duties of higher commander	83–89	90
II. Preliminary duties of patrol leader	90–95	94
III. Preparation by patrol members	96–98	105
Chapter 10. Formations	99–101	107
Chapter 11. Control	102–105	117
Chapter 12. Security	106–110	119
Chapter 13. Movement and halts.		
Section I. Movement	111–125	123
II. Halts	126–127	130
Chapter 14. Information, captured documents, prisoners and reports	128–132	132
Chapter 15. Reconnaissance patrols	133–139	136
Chapter 16. Combat patrols	140–151	139
Chapter 17. Exercises in patrolling.		
Section I. Advice to instructors	152	152
II. Conduct of exercise	153–155	153
III. Illustrative patrol problem	156–160	157
IV. Suggested exercises	161–164	161
PART THREE. SNIPING.		
Chapter 18. Sniping.		
Section I. General	165–170	169
II. Exercises in sniping	171–180	174
Index		182

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PART ONE

SCOUTING

Chapter 1

GENERAL

1. IMPORTANCE. Commanders must have accurate, detailed, and timely information about the enemy, the terrain, and neighboring troops for successful combat. Well-trained scouts and capably led patrols are among the agencies which furnish them such information.

2. THE SCOUT. A scout is a soldier employed in reconnoitering under conditions which require exceptional ability in the use of arms, ground and cover, in movement, in observing, and in accurately reporting the results of his observation. Scouts usually operate in pairs.

3. QUALIFICATIONS. Although all soldiers should be able to act as scouts, some are better suited than others for this work. Men selected to be scouts should be reliable, persevering, intelligent, patient, and should be able to read and write clearly. They should be physically and mentally hard, have unimpaired vision and hearing, and be able to swim. Scouts must be resourceful and possess courage and initiative. They must be good shots and good

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close-in fighters. Men with hay fever, night blindness and impaired sense of smell should not be given duty as scouts, for they will betray their own and others' presence.

4. TRAINING. In order to accomplish their mission of gathering information scouts must be able to operate by night and day over varied terrain and frequently close to or within the enemy position. This requires a high degree of training in concealment, movement, and observation. Scouts must be highly proficient in map reading, the use of the compass, simple sketching, and intelligent reporting. Scouting is best taught and best mastered by the applicatory system. (See FM 21–5.) Exercises in scouting are contained in chapter 7.

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Chapter 2

SCOUTING BY DAY

Section I. COVER AND CONCEALMENT

5. COVER. Cover is protection against the fire of hostile weapons. A reverse slope will give protection from rifle or machine-gun fire, but will not give full protection against the high-angle fire of mortars or howitzers. A person well trained in use of cover can find some protection from such fire on reverse slopes. Many natural objects, trees, rocks, ditches, embankments, and folds in the ground, as well as shell holes, afford protection from hostile fire. Such cover is readily apparent to the untrained eye. The scout must learn to study the terrain in order to appreciate the cover afforded by the slightest depressions and humps in ground that appears flat to the untrained eye. By making full use of all natural cover and using the method of movement best adapted to the situation (pars. 8–11) he will have considerable protection while moving under hostile fire. When looking for cover, he studies the terrain from the enemy's point of view. Many natural objects will give cover and, if time and the mission permit, artificial means can be used to obtain or improve cover. (See par. 7.)

6. CONCEALMENT. Concealment is protection from hostile air or ground observation, but not from hostile fire. Concealment may be natural or improvised. Natural concealment is that found on the ground without any change; artificial concealment may be constructed from various materials such as grass, leaves, or burlap. The scout must become expert in the use of concealment.

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a. The principles of individual concealment are:

(1) *Remain motionless while observing.* Anything in motion instantly attracts the eye; therefore, movement most readily reveals the scout's position. He may be perfectly concealed when motionless but be easily detected when he moves. *All unnecessary movement must be avoided*, and when it becomes necessary to move he should move silently from one concealed position to another. (See pars. 8–11.)

(2) *Use all available concealment.* The scout must always conduct himself as though he is being watched. He should use the best concealment available.

(3) *Observe from prone position.* The prone position offers a low silhouette which makes enemy detection difficult.

(4) *Expose nothing which glistens.* The reflection of the sun from any smooth surface will instantly attract enemy observation.

(5) *Blend with background.* Contrasting colors are quickly observed. Clothing that does not blend with the surroundings will disclose the scout's presence.

(6) *Stay in shade.* A scout's shadow in open terrain, particularly if it is long and in motion, attracts enemy attention.

(7) *Break regular outline of objects.* Figures on the skyline can be seen from great distances and are instantly recognized by their outlines. *Scouts keep off the skyline.* Disruptive painting makes it difficult for an enemy observer to recognize an object.

b. The following aids for concealment will help the scout to remain undiscovered (see fig. 1).

(1) Look around the right side of an object when observing, unless you can look through it.

(2) Fire around the right side of an object.

(3) Never look or fire over the top of concealment or cover unless the outline is broken.

(4) Upon the approach of an airplane, take a prone position face down, and remain motionless. If surprised by an airplane remain in place. COVER THE HANDS AND DO NOT LOOK UP.

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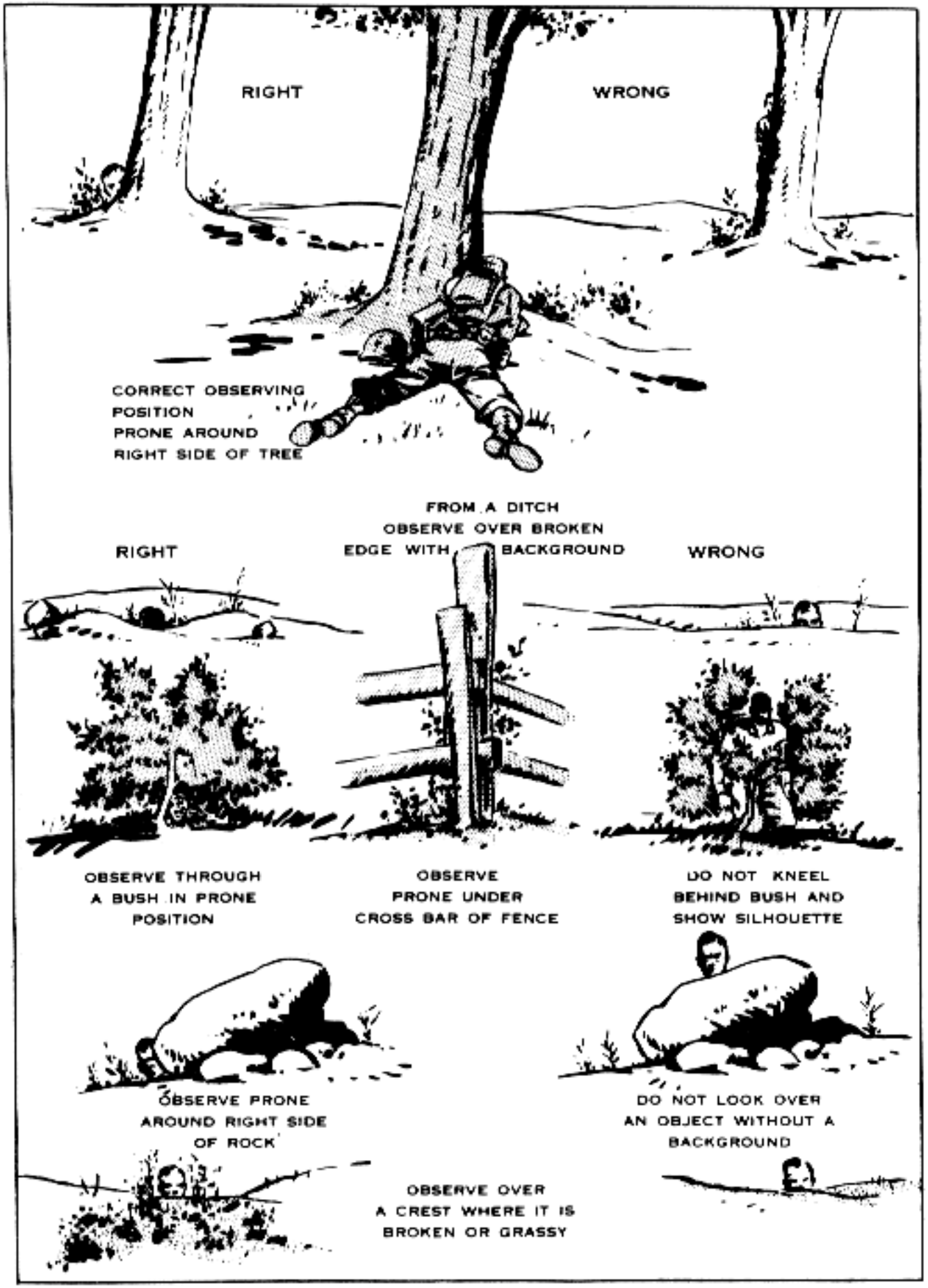
RIGHT
WRONG
CORRECT OBSERVING POSITION PRONE AROUND RIGHT SIDE OF TREE
FROM A DITCH OBSERVE OVER BROKEN EDGE WITH BACKGROUND
RIGHT
WRONG
OBSERVE THROUGH A BUSH IN PRONE POSITION
OBSERVE PRONE UNDER CROSS BAR OF FENCE
DO NOT KNEEL BEHIND BUSH AND SHOW SILHOUETTE
OBSERVE PRONE AROUND RIGHT SIDE OF ROCK
DO NOT LOOK OVER AN OBJECT WITHOUT A BACKGROUND
OBSERVE OVER A CREST WHERE IT IS BROKEN OR GRASSY

Figure 1. Correct and incorrect methods of observing.

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(5) A small, thin bush in the shadow of a large bush makes a good observation point. Lone trees, or rocks, fence corners, and outstanding landmarks are easily picked up as targets by enemy observers.

(6) Paint splotches across the nose, mouth, cheek, and hands with lampblack, burned wood, cork, crankcase oil, grease paint or vaseline with soot on it. Remember that mud dries light and many black substances glisten and reflect light. (See par. 7.) Green grass, crushed in the hands will make a stain that lasts for about ten hours. No exposed skin should be overlooked in splotch painting; back of neck, chest, lower arms, and both backs and palms of hands should be painted. For a position among rocks or in open terrain, tone skin to a solid dark color. (See fig. 2.)

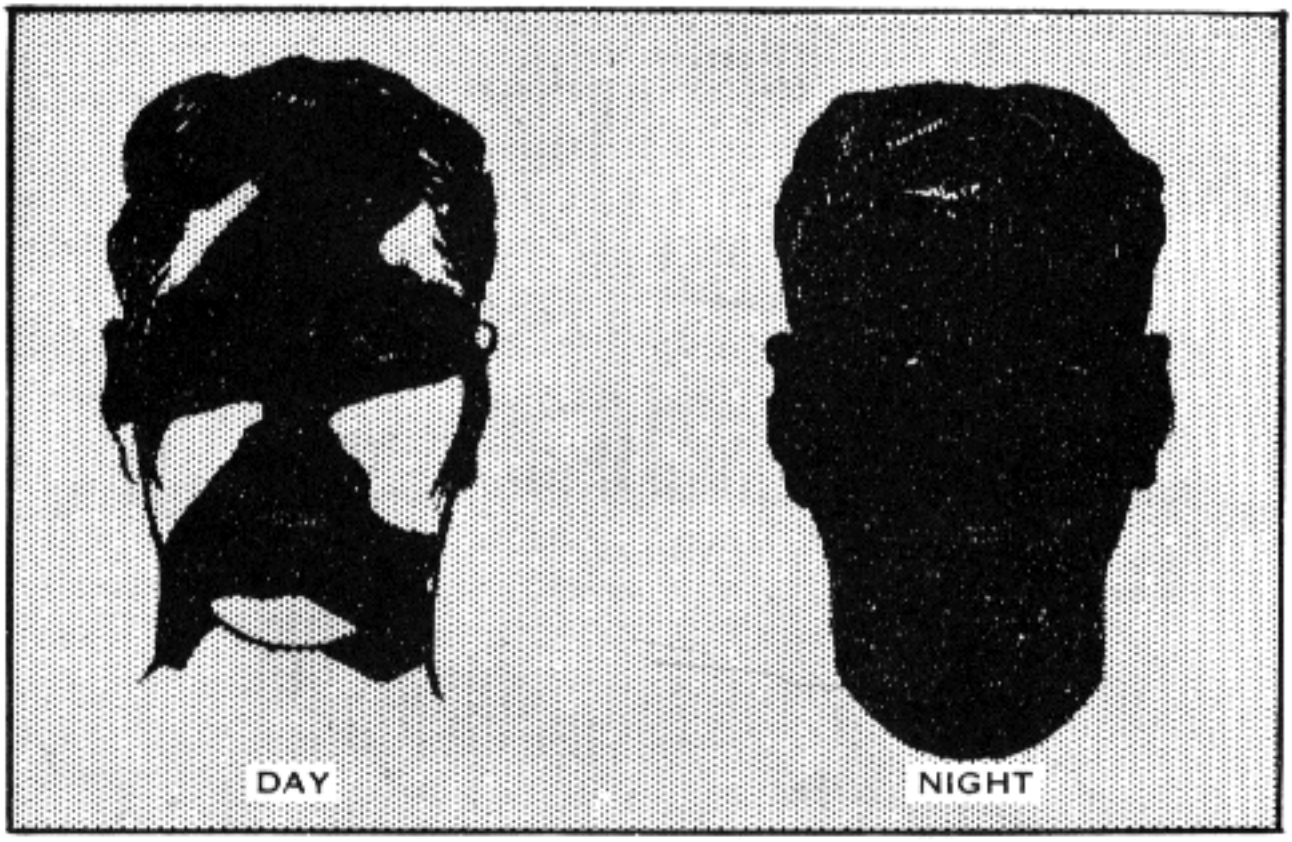

Figure 2. Correct method of darkening face.

(7) Cover any equipment that reflects sunlight.

(8) Use extra care when you are tired. Fatigue leads to carelessness.

(9) Camouflage clothing can be improvised from gunny sacks or sand bags.

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(10) White garments blend in with snowy terrain, especially on a cloudy, windy day.

(11) An improvised suit can be made in the field, when a standard camouflage suit (jungle suit or snow suit) is not available, by painting ordinary fatigues in irregular splotches. A dye, paint, grease, or oil may be applied with an improvised dauber, or a pattern may be stamped on with a block of wood.

(12) A few leaves and a net eliminate shine from the helmet and break its outline. (See par. 7b (2) (*a*).)

7. CAMOUFLAGE. Camouflage means work done to provide protective concealment of military objects from enemy observation. It also refers to the materials used in this work. Camouflage is used not only to conceal an object but also to make an object look like something else. A scout's mission will usually require him to camouflage himself and his position.

a. Fundamentals. (1) Objects are identified by their form (outline), shadow, texture, and color.

(2) The principal purpose of camouflage in the field is to prevent direct observation.

(3) Camouflage must be executed simultaneously with the occupation of a position.

(4) The use of too much material must be avoided. Even when using natural materials, too much should not be used since it makes the object and its shadow appear darker than the surroundings, attracts the attention of a hostile observer, or shows up in a photograph, and thus defeats the purpose of the camouflage.

(5) When the camouflage work is completed, it should be inspected, if possible, from the enemy's point of view. This is the surest way to check its effectiveness.

b. Individual camouflage. (1) Successful individual camouflage involves four factors:

(*a*) Ability to recognize and take advantage of all forms of natural concealment available. (See par. 6.)

(*b*) Knowledge ot the proper use of the available vegetation, soil, and debris for camouflage purposes.

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(*c*) Knowledge of the proper use of artificial camouflage materials.

(*d*) Camouflage discipline.

(2) The scout must realize the dominant colors and pattern of the terrain and, in order to conform, must change the appearance of his clothing and equipment accordingly.

(*a*) Attempts to camouflage the helmet should be directed at breaking up its shape, smooth surface, and shadow. Mud, blotched irregularly on the helmet, will disguise its form and dull its surface. A helmet cover may be used. Such a cover may be improvised from a piece of cloth or burlap, about 20 inches square, irregularly colored to blend with the background, and provided with a drawstring so that it can be gathered under the edge of the helmet. Another means of disguising the helmet is the garnished helmet net, shown in figure 3.

If helmet covers and nets are not available, a strand of wire or twine may be bound around the helmet and foliage inserted under the wire. The foliage should be draped so as to break up the dark shadow of the visor across the face. It should not be allowed to stick up like plumes, because the slightest movement of the head will cause the foliage to move and thus give the position away.

(*b*) An issue dye may be used to darken faded equipment. (See TM 5–267.) For other ways to camouflage the person and clothing, see paragraph 6 *b*.

(*c*) Methods of painting the face are shown in figure 2. They are intended to have both a concealing effect and, in hand-to-hand combat, a psychological effect. Patterns should break telltale shadow lines and mask the eyes and cheekbones. Wide solid bands and regular designs should not be used. Individuals may have to assist each other in applying patterns. Darkening the face itself is a much more practical solution than using a hood, since the hood may slip to one side or the other so that the scout's vision is cut off. This is especially dangerous in a situation demanding not only concealment, but immediate readiness for action. (See FM 5–20.)

(*d*) The straight line of the rifle, or other small arm, may be very conspicuous to an enemy sniper, or other close

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Figure 3. Helmet camouflage.

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observer. In the figure on the frontispiece of this manual, the barrel and hand guard of the rifle have been wrapped with tape of contrasting color to break the regular outline. On other terrain, strips of material normally used for garnishing nets and colored to blend in with the particular background can be used to advantage. Mud or dirt may be used to dull the reflecting surface of a polished stock, or a barrel from which the coloring has been worn. After use, the last six inches of the barrel of the M1 rifle shines brilliantly and is very conspicuous. Some benefit may be obtained by coating this part of the rifle with lampblack in the same way that a rifleman blackens his sights. The bayonet should be darkened or painted with a dull, dark paint.

Section II. MOVEMENT

8. PRINCIPLES OF MOVEMENT. a. The scout moves from one concealed location to another. When not changing his position he remains *motionless.* The fire of light automatic weapons makes the above more important than ever before.

b. To observe, he lifts his head slowly yet steadily, and without abrupt movements.

c. From each position he selects his next stopping place. He avoids isolated, conspicuous places of concealment. Before leaving one position he must make certain that his next stopping place does not contain an enemy. Every location from which the enemy may observe must be considered as actually occupied by the enemy.

d. When changing position by running he must spring up, run with body bent low, and drop to the earth quickly. Advantage must always be taken of walls, ditches, or similar cover. If close to the enemy, a slight rise may enable the scout to advance even closer by creeping or crawling.

9. AIDS TO MOVEMENT. a. (1) A scout should carry only necessities. Additional weight causes premature fa-

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tigue and impedes free movement.

(2) A scout should not disturb birds or animals whose flight would betray his presence. If the scout should alarm birds or animals, he remains motionless under cover for a few minutes as attention may have been attracted to his position.

(3) Any incident which diverts attention, such as an airplane flight, a distant disturbance, or sudden bursts of fire, diverts observation from the scout. He moves during such incidents.

(4) Fog or even light haze offers concealment for movement.

(5) When in the presence of the enemy, it is best to swim a body of water at night. If necessary to do so in the daytime, a small raft for concealing the head may be made with a few sticks or brush and tufts of grass. In any case, the scout should try to improvise a float for his rifle and equipment.

(6) A scout moving along a beach should keep close to the water's edge. The waves and spray will help to conceal him from a boat offshore, and to wash away his footprints.

(7) When in tall grass or similar growth, the scout should move when the wind blows, changing direction frequently, as a straight route will be noticed more readily.

(8) He should avoid making tracks wherever possible, especially in snow.

(9) In returning to his own lines, the scout avoids the route used in going out.

(10) In crossing a road the scout selects a position with shadows, or near a bend, and crosses rapidly in a low position.

Figure 4. Prone position.

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(11) In crossing a plowed field the scout follows the length of the furrow to avoid the bobbing movement caused by crossing the furrows.

b. Prone position. The body is flat. The left cheek is on the ground. The legs are extended and spread. The heels, turned in, touch the ground. If the rifle is carried, it is grasped in the right hand at the balance, muzzle to the front, operating handle up. (See fig. 4.)

c. Rushing from prone position. See figure 5.

① *The soldier starts the rush from the prone position.*

② *He slowly raises his head to select a new position.*

③ *He slowly lowers his head, draws arms inward, and cocks the right leg forward, preparing to rush.*

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④ *With one movement, he raises his body by straightening his arms.*

⑤ *He springs to his feet, stepping off with his left foot.*

⑥ *He runs forward in a straight line, crouched low, to the new position.*

Figure 5. Rushing from prone position.

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d. Dropping to prone position. See figure 6.

① *The soldier plants both feet in place.*

② *He drops to his knees, and at the same time slides his hand to the heel of his rifle.*

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③ *He falls forward, breaking the fall with the butt of his rifle.*

④ *He then rolls into the firing position, or lies as flat as possible on the ground. If he thinks he has been observed, and concealment exists, he moves a short distance toward a flank, moving in the most practicable manner.*

Figure 6. Dropping to prone position.

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e. Creeping. See figure 7.

① *The body is kept free of the ground, and the weight of the body rests on the forearms and lower legs. The rifle is cradled in the arms, so that the muzzle is kept out of the dirt. Knees must be kept well behind the buttocks.*

② *The soldier moves forward by alternately advancing the elbows and knees. The left elbow is advanced at the same time as the right knee.*

③ *In creeping, the soldier presents a higher silhouette than in crawling, but movement is faster.*

Figure 7. Creeping.

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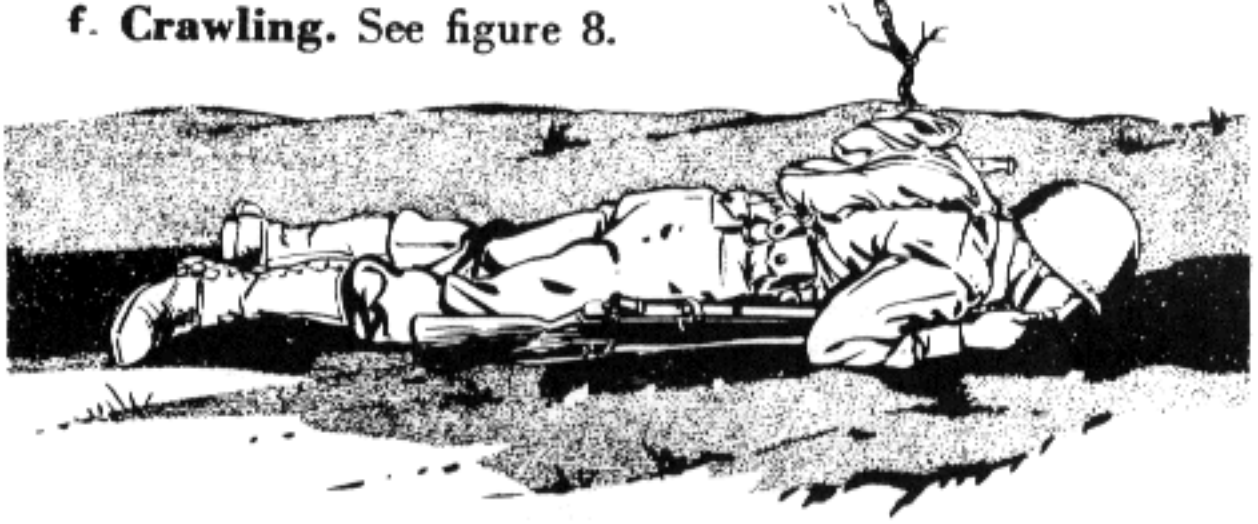
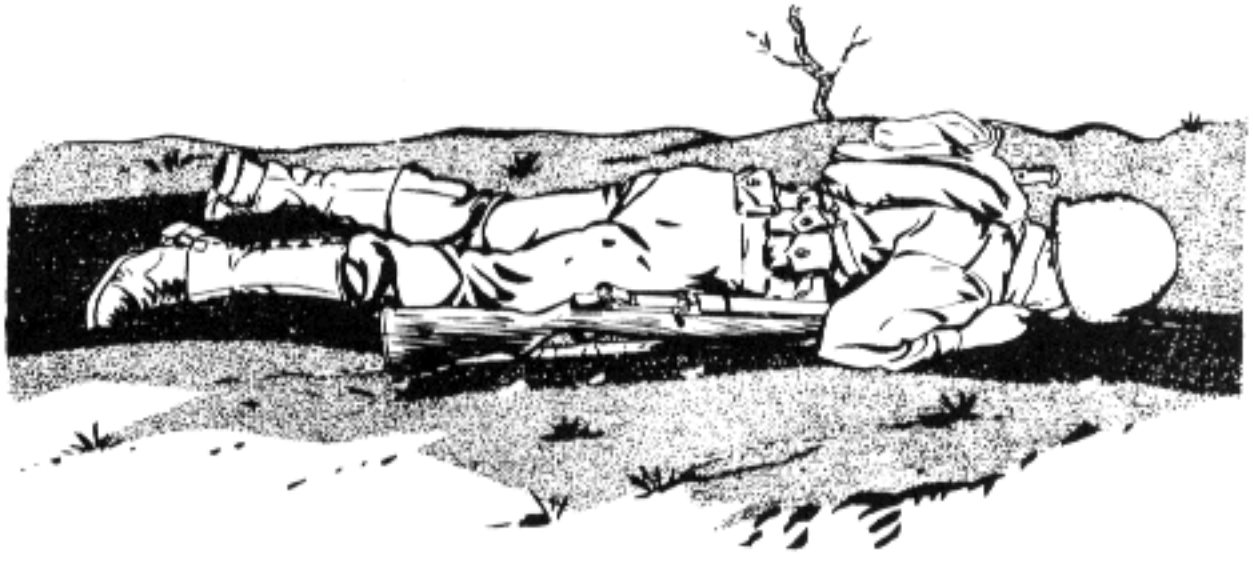
f. Crawling. See figure 8.



① *The body is as flat as possible against the ground. The cheek is flat against the ground. The rifle is carried at the balance, or dragged along on the toe of the butt with the thumb or forefinger over the muzzle. Care must be taken to keep the rifle muzzle out of the dirt.*

② *To move forward, the soldier pushes his arms forward and cocks one leg forward.*



③ *He pulls himself forward with his arms and pushes with the forward leg.*

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④ *The soldier may move by pushing with one leg only, or may move faster (but be more exposed) by alternately pushing with either leg.*
Figure 8. Crawling.

10. DETERMINING DIRECTION WITHOUT COMPASS. a. General. A scout should rarely, if ever, be without a compass. If he is, his most common means of assistance are heavenly bodies, the prevailing wind, and geographic features. To the experienced scout other means, such as natural signs, present themselves.

b. By watch and sun. Within latitudes of the north temperate zone, which include the continental limits of the United States, the following method, correct to within 8°, may be used from about 0600 to 1800. Set your watch at correct sun time for that locality, then hold it horizontally, face up, and point the hour hand at the sun; a line from the center of the dial passing halfway between the hour hand and 12 o'clock (bisecting the smaller arc) points south. Look along this line and pick out some object in line on the ground. (See fig. 9.)

c. By the stars. The two stars at the end of the bowl of the Big Dipper, known as the "pointers", indicate at any hour the position of the North Star. The Big Dipper revolves around the North Star and the pointers continue to indicate its position. The scout should remember that although the Big Dipper changes position in the sky the "pointers" continue to point to the North Star. To locate the North Star look out for a distance equal to five times the distance between the pointers in line with the pointers in the direction

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in which water would flow out of the dipper. Another constellation, Cassiopeia, may assist in locating the North Star. The five principal stars of Cassiopeia form a "W." This constellation is opposite the North Star from the Big Dipper. Note on the chart that the distance from the North Star to Cassiopeia and from the North Star to the Big Dipper is about the same. Cassiopeia also revolves about the North Star. The top of the "W" points generally in the direction of the North Star and the Big Dipper. The direction of the North Star is true north. (See figure 10.)

Figure 9. Sun and watch method of determining direction.

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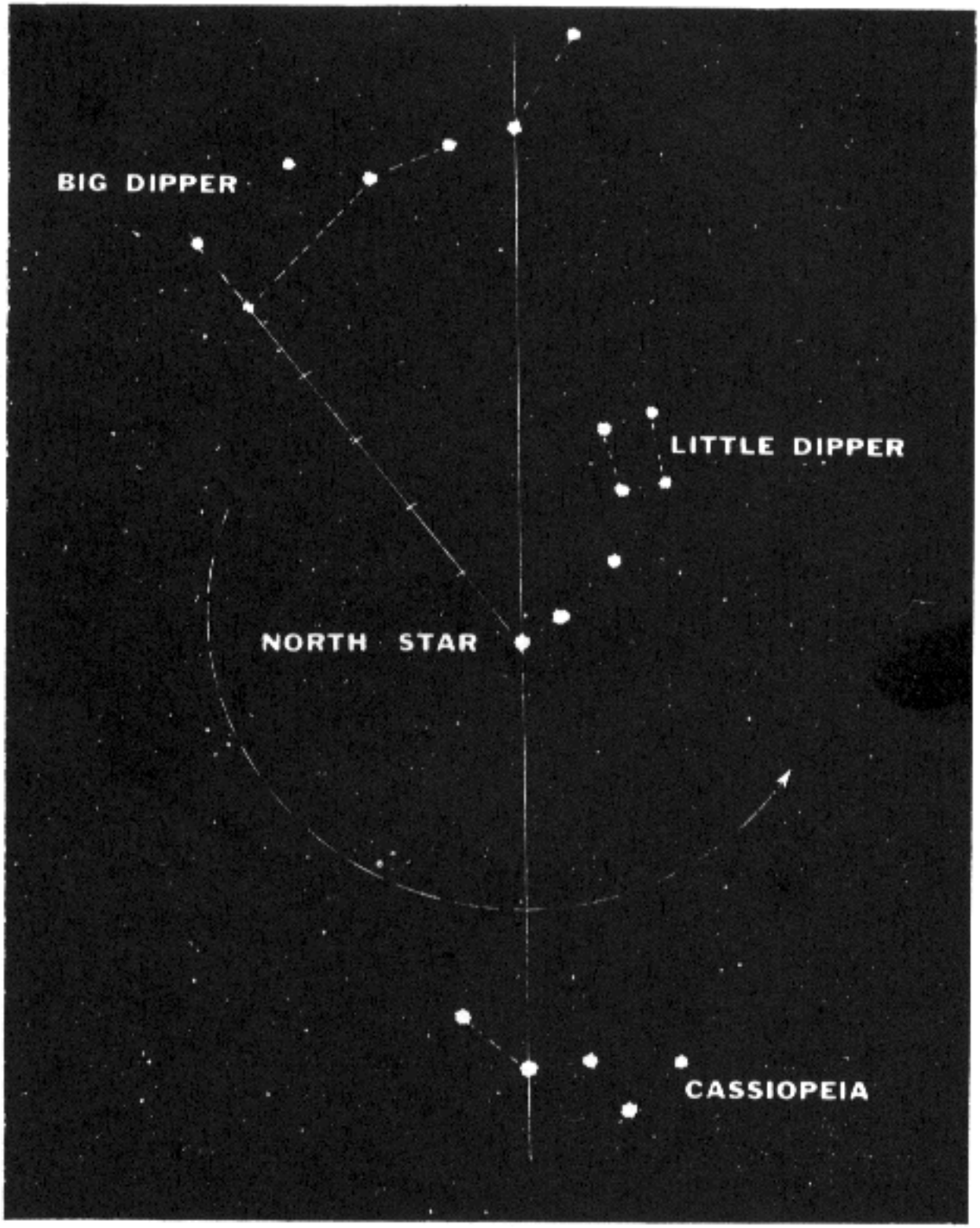

Figure 10. Locating the North Star.

If the scout is anywhere south of the equator, he will not be able to see the North Star. In this case the constellation known as the Southern Cross is used to indicate south. The stars in the long axis of the cross act as pointers, the foot of the cross pointing to the South Star, which is as far

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SURVIVAL MANUAL

WINTER 2002

UNITED STATES MARINE CORPS

Mountain Warfare Training Center
Bridgeport, California 93517-5001

WINTER SURVIVAL COURSE HANDBOOK

TABLE OF CONTENTS

CHAP	CONTENTS
1	REQUIREMENTS FOR SURVIVAL
2	SURVIVAL KIT
3	WATER PROCUREMENT
4	EXPEDIENT SHELTERS AND FIRES
5	CORE VALUES AND MOUNTAIN LEADERSHIP CHALLENGES
6	SURVIVAL SIGNALING AND RECOVERY
7	SURVIVAL NAVIGATION
8	TRAPS AND SNARES
9	USES FOR GAME
10	SURVIVAL FISHING
11	FIELD EXPEDIENT TOOLS, WEAPONS, AND EQUIPMENT
12	EXPEDIENT SNOWSHOES
13	WINTER TRACKING
14	SURVIVAL MEDICINE
15	WEATHER
16	INTRO TO EVASION
17	AVALANCHE AND ICE HAZARDS

APPENDIX

A	EVASION PLAN OF ACTION FORMAT
B	“THE EDGE” GUIDED DISCUSSION
C	SURVIVAL QUICK REFERENCE CHECKLIST
D	ANIMAL HABITS
E	TACTICAL CONSIDERATIONS
F	GRADING STANDARDS

UNITED STATES MARINE CORPS

Mountain Warfare Training Center
Bridgeport, California 93517-5001

WSVX 02.01
02/06/05

STUDENT HANDOUT

REQUIREMENTS FOR SURVIVAL

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, apply the requirements for survival, in accordance with the references. **(WSVX.02.01)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references and given the acronym "SURVIVAL", describe in writing the acronym "SURVIVAL", in accordance with the references. **(WSVX.02.01a)**

(2) Without the aid of references, list in writing the survival stressors, in accordance with the references. **(WSVX.02.01b)**

(3) Without the aid of references, list in writing the priorities of work in a survival situation, in accordance with the references. **(WSVX.02.01c)**

OUTLINE

1. **REQUIREMENTS FOR SURVIVAL**

a. This mental "mind-set" is important in many ways. We usually call it the "will to survive" although you might call it "attitude" just as well. This basically means that, if you do not have the right attitude, you may still not survive.

b. A guideline that can assist you is the acronym " SURVIVAL". (**WSVX.02.01a**)

(1) **S**ize up.

(a) Size up the situation.

1. Conceal yourself from the enemy.

2. Use your senses to hear, smell, and see to determine and consider what is developing on the battlefield before you make your survival plan.

(b) Size up your surroundings.

1. Determine the rhythm or pattern of the area.

2. Note animal and bird noises and their movement.

3. Note enemy traffic and civilian movement.

(c) Size up your physical condition.

1. Check your wounds and give yourself first aid.

2. Take care to prevent further bodily harm.

3. Evaluate condition of self and unit prior to developing survival plan.

(d) Size up your equipment.

1. Consider how available equipment may affect survival senses; tailor accordingly.

(2) **U**ndue haste makes waste.

(a) Plan your moves so that you can move out quickly without endangering yourself if the enemy is near.

(3) **R**emember where you are.

(a) If you have a map, spot your location and relate it to the surrounding terrain.

(b) Pay close attention to where you are and where you are going. **Constantly orient yourself**.

(c) Try to determine, at a minimum, how your location relates to the following:

1. The location of enemy units and controlled areas.

2. The location of friendly units and controlled areas.

3. The location of local water sources.

4. Areas that will provide good cover and concealment.

(4) **V**anquish fear and panic.

(a) Realistic and challenging training builds self-confidence and confidence for a unit's leadership.

(b) The feeling of fear and panic will be present. The survivor must control these feelings.

(5) **I**mprovise and Improve.

(a) Use tools designed for one purpose for other applications.

(b) Use objects around you for different needs. (i.e. use a rock for a hammer)

(6) **V**alue living.

(a) Place a high value on living.

(b) Refuse to give into the problem and obstacles that face you.

(c) Draw strength from individuals that rise to the occasion.

(7) **A**ct like the natives.

(a) Observe the people in the area to determine their daily eating, sleeping, and drinking routines.

(b) Observe animal life in the area to help you find sources of food and water.

NOTES: Remember that animal reactions can reveal your presence to the enemy.
Animals cannot serve as an absolute guide to what you can eat and drink.

(8) **L**ive by your wits, **but for now**, learn basic skills.

(a) Practice basic survival skills during all training programs and exercises.

2. **STRESS**. Stress has many positive benefits. Stress provides us with challenges: it gives us chances to learn about our values and strengths. Too much stress leads to distress. While many of these signs may not be self-identified, it remains critical that all survivors remain attentive to each other's signs of distress. Listed are a few common signs of distress found when faced with too much stress:

a. Difficulty in making decisions (**do not confuse this sign for a symptom of hypothermia**).

b. Angry outbursts.

c. Forgetfulness.

d. Low energy level.

e. Constant worrying.

f. Propensity for mistakes.

g. Thoughts about death or suicide.

h. Trouble getting along with others.

i. Withdrawing from others.

j. Hiding from responsibilities.

k. Carelessness.

3. **SURVIVAL STRESSORS**. **(WSVX.02.01b)** Any event can lead to stress. Often, stressful events occur simultaneously. These events are not stress, but they produce it and are called "stressors". In response to a stressor, the body prepares either to "fight or flee". Stressors add up. Anticipating stressors and developing strategies to cope with them are the two ingredients in the effective management of stress. It is essential that the survivor be aware of the types of stressors he will encounter.

   a. Injury, Illness, or Death. Injury, illness, and death are real possibilities a survivor has to face. Perhaps nothing is more stressful than being alone in an unfamiliar environment where you could die from hostile action, an accident, or from eating something lethal.

   b. Uncertainty and Lack of Control. The only guarantee in a survival situation is that nothing is guaranteed. This uncertainty and lack of control also add to the stress of being ill, injured, or killed.

   c. Environment. A survivor will have to contend with the stressors of weather, terrain, and the variety of creatures inhabiting an area. Heat, cold, rain, winds, snow, mountains, insects, and animals are just a few of the challenges awaiting the Marine working to survive.

   d. Hunger and Thirst. Without food and water a person will weaken and eventually die. Getting and preserving food and water takes on increasing importance as the length of time in a survival setting increases. With the increased likelihood of diarrhea, replenishing electrolytes becomes critical. For a Marine used to having his provisions issued, foraging can be a big source of stress.

   e. Fatigue. It is essential that survivors employ all available means to preserve mental and physical strength. While food, water, and other energy builders may be in short supply, maximizing sleep to avoid deprivation is a very controllable factor. Further, sleep deprivation directly correlates with increased fear.

f. Isolation. Being in contact with others provides a greater sense of security and a feeling someone is available to help if problems occur.

4. **NATURAL REACTIONS**. Man has been able to survive many shifts in his environment throughout the centuries. His ability to adapt physically and mentally to a changing world kept him alive. The average person will have some psychological reactions in a survival situation. These are some of the major internal reactions you might experience with the survival stressors.

   a. Fear. Fear is our emotional response to dangerous circumstances that we believe have the potential to cause death, injury, or illness. Fear can have a positive function if it encourages us to be cautious in situations where recklessness could result in injury.

   b. Anxiety. Anxiety can be an uneasy, apprehensive feeling we get when faced with dangerous situations. A survivor reduces his anxiety by performing those tasks that will ensure his coming through the ordeal

   c. Anger and Frustration. Frustration arises when a person is continually thwarted in his attempts to reach a goal. One outgrowth of frustration is anger. Getting lost, damaged or forgotten equipment, the weather, inhospitable terrain, enemy patrols, and physical limitations are just a few sources of frustration and anger. Frustration and anger encourage, irrational behavior, poorly thought-out decisions, and, in some instances, an "I quit" attitude.

   d. Depression. Depression is closely linked with frustration and anger when faced with the privations of survival. A destructive cycle between anger and frustration continues until the person becomes worn down-physically, emotionally, and mentally. At this point, he starts to give up, and his focus shifts from "What can I do" to "There is nothing I can do."

   e. Loneliness and Boredom. Man is a social animal and enjoys the company of others. Loneliness and boredom can be another source of depression. Marines must find ways to keep their minds productively occupied.

   f. Guilt. The circumstances leading to your survival setting are sometimes dramatic and tragic. It may be the result of an accident or military mission where there was a loss of life. Perhaps you were the only, or one of a few, survivors. While naturally relieved to be alive, you simultaneously may be mourning the deaths of others that were less fortunate. Do not let guilt feelings prevent you from living.

5. **PRIORITIES OF WORK IN A SURVIVAL SITUATION. (WSVX.02.01c)** Each survival situation will have considerable aspects that will alter the order in which tasks need to be accomplished. A general guideline is to think in blocks of time.

   a. First 24 hours. The first 24 hours are critical in a survival situation. You must make an initial estimate of the situation. Enemy, weather, terrain, time of day, and available resources will determine which tasks need to be accomplished first. They should be following.

      (1) Shelter

      (2) Fire

(3) Water

(4) Signaling

b. Second 24 hours. After the first 24 hours have passed, you will now know you can survive. This time period needs to be spent on expanding your knowledge of the area. By completing the following tasks, you will be able to gain valuable knowledge.

(1) Tools and weapons. By traveling a short distance from your shelter to locate the necessary resources, you will notice edible food sources and game trails.

(2) Traps and snares. Moving further away from your shelter to employ traps and snares, you will be able to locate your shelter area form various vantage points. This will enable you to identify likely avenues of approach into your shelter area.

(3) Pathguards. Knowing the likely avenues of approaches, you can effectively place noise and causality producing pathguards to ensure the security of your shelter area.

c. Remainder of your survival situation. This time is spent on continuously improving your survival situation until your rescue.

6. **GROUP SURVIVAL.** In group survival, the group's survival depends largely on its ability to organize activity. An emergency situation does not bring people together for a common goal; rather, the more difficult and disordered the situation, the greater are the disorganized group's problems.

a. Groups Morale. High morale must come from internal cohesiveness and not merely through external pressure. The moods and attitudes can become wildly contagious. Conscious well-planned organization and leadership on the basis of delegated or shared responsibility often can prevent panic. High group morale has many advantages.

(1) Individual feels strengthened and protected since he realizes that his survival depends on others whom he trusts.

(2) The group can meet failure with greater persistency.

(3) The group can formulate goals to help each other face the future.

b. Factors that Influence Group Survival. There are numerous factors that will influence whether a group can successfully survive.

(1) Organization of Manpower - Organized action is important to keep all members of the group briefed; this way the members of the group will know what to do and when to do it, both under ordinary circumstances and in emergencies.

(2) Selective Use of Personnel - In well-organized groups, the person often does the job that most closely fits their personal qualifications.

(3) Acceptance of Suggestion and Criticisms - The senior man must accept responsibility for the final decision, but must be able to take suggestion and criticisms from others.

(4) Consideration of Time - On-the-spot decisions that must be acted upon immediately usually determines survival success.

(5) Check Equipment - Failure to check equipment can result in failure to survive.

(6) Survival Knowledge and Skills - Confidence in one's ability to survive is increased by acquiring survival knowledge and skills.

REFERENCE:

1. Barry Davies BME, SAS Escape, Evasion, and Survival Manual, 1996.
2. FM 21-76, Survival, 1992.
3. John Wiseman, SAS Survival Guide, 1986.
4. AFM 64-5, Search and Rescue Survival, 1969.
5. B-GA-217-001/PT-001, Down but not Out.

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WSVX 02.02
2/6/05

STUDENT HANDOUT

SURVIVAL KIT

TERMINAL LEARNING OBJECTIVE. In a cold weather mountainous environment, construct a survival kit, in accordance with the references. **(WSVX.02.02)**

ENABLING LEARNING OBJECTIVES.

(1) Without the aid of references, list in writing the components for a survival kit, in accordance with the references. **(WSVX.02.02a)**

(2) Without the aid of references, list in writing one example of each component for a survival kit, in accordance with the references. **(WSVX.02.02b)**

OUTLINE

1. **COMPONENTS FOR A SURVIVAL KIT**

a. The environment is the key to the types of items you will need in your survival kit. How much equipment you put in your kit depends on how you will carry the kit. A kit on your body will have to be much smaller than one carried in a vehicle.

b. Always layer your survival kit, keeping the most important items on your body.

c. In preparing your survival kit, select items that can be used for more than one purpose.

d. Your survival kit does not need to be elaborate. You only need functional items that will meet your needs and a case to hold them. The case might be a first aid case, an ammunition pouch, or another suitable case. This case should be-

(1) Water repellent or waterproof.

(2) Easy to carry or attach to your body.

(3) Suitable to accept various sized items.

(4) Durable.

e. When constructing a survival kit, you should have the following components: **(WSVX.02.02a)**

(1) Fire starting items.

(2) Water procurement items.

(3) Food procurement items.

(4) Signaling items.

(5) First aid items.

(6) Shelter items.

2. **ITEMS CONTAINED WITHIN EACH COMPONTENT (WSVX.02.02b)**

a. Fire Starting Equipment

(1) Matches.

(2) Magnifying glass.

(3) Flint and Steel.

(4) Lighter.

(5) Potassium Permanganate, with container of sugar or anti-freeze.

(6) Prepackaged Tinder.

-Commercially Manufactured
-Cotton Balls and Petroleum Jelly

b. Water Procurement Item.

(1) Water Disinfecting Chemicals.

-Iodine Tablets
-Betadine Solution
-Iodine Solution
-Bleach

(2) Metal Container. (Serves for boiling water)

-Canteen Cup
-Survival Kit Container
-Any Suitable can that contained no petroleum products.

(3) Water Carrying Items.

-Canteen
-Plastic Bag
-Plastic/Metal/Glass Container which contained no petroleum products.

c. Food Procurement Items.

(1) Fish.

-Various sized hooks
-Various sized sinkers/weights
-Metal leaders and swivels
-Small weighted jigs
-Fishing line
-Think about the size of fish for that environment when selecting weights and sizes.

(2) Game.

-Snares
*Commercially Manufactured
*Aircraft Cable
*Tie Wire/ Comm Wire
-Bait
*MRE Cheese Spread, Jelly, or Peanut Butter Package
*Fishing Bait
-550 Cord for Gill Net and Trap Construction
-Engineer/Marking Tape
-Sling shot rubber and pouch
-Large treble hooks

d. Signaling Items

(1) Day

-Mirror
-Whistle
-Pyrotechnics (Smoke, Pen Flares)
-Air Panels/ Brightly colored material

(2) Night.

-Pyrotechnics (Pen Flares, Star Clusters)
-Lights (Flashlight, Strobe, Chemlight)
-Whistle
-Buzz Saw

e. Shelter Items

(1) Cordage.

- 550 Cord.
- Wire.
-Communication wire
-Tie wire

(2) Finger Saw.

(3) Sewing Kit with Needles for construction/repair of clothing.

(4) Tentage.

-poncho
-space blanket

(5) Candle.

f. First Aid Items

(1) Band-Aids.

-Steristrips
-Adhesive Tape
-Non-stick pads, 4x4's, Gauze, Battle Dressings
-Muslin Bandage
-Butter flies w/ Super glue

(2) Ointments.

-Burn
-Anti-septic

(3) Miscellaneous.

-Salt
-Sugar
-Eye Wash
-Alcohol prep pads
-Suture Kit
-Scalpel
-Vile of Yarrow

g. Miscellaneous items.

(1) Fingernail clippers.

(2) Compass.

(3) Notebook with pen or pencil.

(4) Wood eye screws and nails.

(5) Surgical tubing.

Note: It is assumed that the Marine is always carrying a high quality fixed bladed knife, a multi-tool knife, and a sharpening stone.

REFERENCE:

1. Barry Davies BME, SAS Escape, Evasion, and Survival Manual, 1996.
2. FM 21-76, Survival, 1992.
3. John Wiseman, SAS Survival Guide, 1986.

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WSVX.02.03
2/6/05

STUDENT HANDOUT

WATER PROCUREMENT

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, and given water procurement materials, obtain potable water, in accordance with the references. **(WSVX.02.03)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, describe in writing why ice is more preferable than snow for melting into drinking water, in accordance with the references. **(WSVX.02.03a)**

(2) Without the aid of references, list in writing the hazardous fluids to avoid substituting for potable water, in accordance with the references. **(WSVX.02.03b)**

(3) Without the aid of references, list in writing the methods for disinfecting water, in accordance with the references. **(WSVX.02.03c)**

(4) Without the aid of references, and given a military bottle of water purification tablets, state in writing its self-life, in accordance with the references. **(WSVX.02.03d)**

(5) Without the aid of references, and given the water temperature and chemical concentration, state in writing the contact time to disinfect water, in accordance with the references. **(WSVX.02.03e)**

(6) Without the aid of references, construct a water generator, in accordance with the references. **(WSVX.02.03f)**

OUTLINE

1. **WATER INTAKE**

   a. Thirst is not a strong enough indicator.

   b. The best plan is to drink utilizing the OVER DRINK method. Drink plenty of water when it is available especially when eating.

c. Dehydration is a major threat. A loss of only 5 % of your body fluids causes thirst, irritability, nausea, and weakness; a 10% loss causes dizziness, headache, inability to walk, and a tingling sensation in limbs; a 15% loss causes dim vision, painful urination, swollen tongue, deafness, and a feeling of numbness in the skin; also a loss of more than 15% body fluids could result in death.

d. Your water requirements will be increased if:

(1) You have a fever.

(2) You are experiencing fear or anxiety.

(3) You evaporate more body fluid than necessary. (i.e., not using the proper shelter to your advantage)

(4) You have improper clothing.

(5) You ration water.

(6) You overwork.

2. **LOCATING WATER**.

a. The environment may sometimes provide you with opportunities to acquire water. In a cold weather mountainous region water can generally be located in the following:

(1) Snow. Snow can be melted for potable water. Melting snow will result in a higher fuel usage. Uncontaminated snow does not need to be disinfected.

(2) Ice. **(WSVX.02.03a)** Ice can be melted for potable water. Melting ice is preferable to melting snow due to the higher concentration of water per volume. However, since ice is frozen water it needs to be disinfected.

(3) Streams and Rivers. Streams and rivers can generally be found in a mountainous region. Extreme caution must be used when approaching the edge to avoid accidental cold-water submersion.

(4) Sea Ice. In time, sea ice loses its salinity. You can identify this ice by its rounded corners and bluish color. Gray ice has not yet lost its salt content.

b. The following are some general considerations when using snow and ice for water.

(1) Never melt snow or ice inside your mouth. This removes body heat and increases the chance of cold weather injuries.

(2) When on the move, use body heat to melt snow. Place snow or ice in a water bag and place the bag between your layers of clothing, not directly on the skin.

(3) Do not waste fuel to melt snow or ice when drinkable water (i.e., stream) is available.

(4) If melting snow in a container by a fire, utilize a hot rock to speed up the process and conserving fuel.

3. **HAZARDOUS FLUIDS (WSVX.02.03b*)***

a. Survivors have occasionally attempted to augment their water supply with other fluids such as; alcoholic beverages, urine, blood, or seawater. While it is true that each of these fluids have high water content, the impurities they contain require the body to expend more fluid to purify them.

(1) Seawater. Seawater in more than minimal quantities is actually toxic. The concentration of sodium and magnesium salts in it is so high that fluid must be drawn from the body to eliminate the salts and eventually the kidneys cease to function.

(2) Alcohol. Drinking alcoholic liquids will dehydrate the body, reduce body heat, and cloud judgment. Ingesting a super-cooled liquid can cause immediate frostbite of the throat and possible death.

(3) Blood. Blood is considered a food. Drinking blood will require your body to expend additional fluid in order to digest it.

(4) Urine. Drinking urine is foolish. Urine is nothing more than body waste. Drinking urine returns waste into your body and requires more fluid to expel it.

4. **WATER QUALITY**. Water contains minerals, toxins, and pathogens. If consumed in large enough quantities these may be harmful to human health. Pathogens are our primary concern. Pathogens are divided into Virus, Cysts, Bacteria, and Parasites. Certain pathogens are more resistant to chemicals and small enough to move through microscopic holes in equipment (i.e., T-shirt, parachute). Certain pathogens also have the ability to survive in extremely cold water temperatures. Water quality is divided into three levels of safety. Disinfection as the most desired level followed by purified then potable.

a. Disinfection. Water disinfection removes or destroys harmful microorganisms. Giardia cysts are an ever-present danger in clear appearing mountain water throughout the world. By drinking non-potable water you may contract diseases or swallow organisms that could harm you. Examples of such diseases or organisms are: Dysentery, Cholera, Typhoid, Flukes, and Leeches.

b. Impure water, no matter how overpowering your thirst, is one of the worst hazards in a survival situation.

c. The first step in disinfecting is to select a treatment method. The two methods we will discuss are as follows: **(WSVX.02.03c)**

(1) Heat. The Manual of Naval Preventive Medicine (P-5010) states that you must bring the water to a rolling boil before it is considered safe for human consumption. This is the most preferred method.

(a) Bringing water to the boiling point will kill 99.9% of all Giardia cysts. The Giardia cyst dies at 60^{O}C and Cryptosporidium dies at 65C. Water will boil at 14,000 ft at 86^{O}C and at 10,000' at 90C. With this in mind you should note that altitude does not make a difference unless you are extremely high.

(2) Chemicals. There are numerous types of chemicals that can disinfect water. These chemicals are called halogens. In a survival situation, you will use whatever you have available.

(a) Iodine Tablets.

(b) Chlorine Bleach.

(c) Iodine Solution.

(d) Betadine Solution.

(e) Military water purification tablets. **(WSVX.02.03d)** These tablets are standard issue for all DOD agencies. These tablets have a shelf life of four years from the date of manufacture unless opened. Once the seal is broken, the shelf life is one year not to exceed the initial expiration date of four years.

49703 Month / Year / Batch Number

(3) Water Disinfection Techniques and Halogen Doses.

Iodination techniques Added to 1 liter or quart of water	Amount for 4 ppm	Amount for 8 ppm
Iodine tablets Tetraglcine hydroperiodide EDWGT Potable Aqua Globaline	½ tablet	1 tablet
2% iodine solution (tincture)	0.2 ml 5 gtts	0.4 ml 10 gtts
10% povidone-iodine solution*	0.35 ml 8 gtts	0.70 ml 16 gtts
Chlorination techniques	Amount for 5 ppm	Amount for 10 ppm
Household bleach 5% Sodium hypochlorie	ml 2 gtts	ml 4 gtts
AquaClear Sodium dichloroisocyanurate		1 tablet
AquaCure, AquaPure, Chlor-floc Chlorine plus flocculating agent		8 ppm 1 tablet

*Providone-iodine solutions release free iodine in levels adequate for disinfection, but scant data is available.

Measure with dropper (1 drop=0.05 ml) or tuberculin syringe

Ppm-part per million gtts-drops ml-milliliter

Concentration of halogen **Contact time in minutes at various water temperatures (WSVX.2.3e)**

	5 C / 40 F	15 C / 60 F	30 C / 85 F
2 ppm	240	180	60
4 ppm	180	50	45
8 ppm	60	30	15

Note: These contact times have been extended from the usual recommendations to account for recent data that prolonged contact time is needed in very cold water to kill *Giardia* cysts.

Note: chemicals may not destroy Cryptosporidium due to its extremely tough membrane.

d. Purification. Water purification is the removal of organic and inorganic chemicals and particulate matter, including radioactive particles. While purification can

eliminate offensive color, taste, and odor, it may not remove or kill all microorganisms.

(1) Commercial Water Filters. Commercial water filters are generally available in most retail stores and may be with you. Understanding what the filter can do is the first step in safeguarding against future illnesses.

(a) A filter with greater than a .03 micron opening will not stop Cryptosporidium.

(b) A filter system that does not release a chemical (i.e., iodine) may not kill all pathogens.

(c) A filter that has been overused may be clogged. Usage may result in excessive pumping pressure that can move harmful pathogens through the opening. Filter chambers may become plugged causing the pathogen to mutate.

e. Potable. Potable only indicates a water source, on average over a period of time, contains a "minimal microbial hazard," so the statistical likelihood of illness is acceptable.

(1) Sedimentation. Sedimentation is the separation of suspended particles large enough to settle rapidly by gravity. The time required depends on the size of the particle. Generally, 1 hour is adequate if the water is allowed to sit without agitation. After sediment has formed on the bottom of the container, the clear water is decanted or filtered from the top. Microorganisms, especially cysts, eventually settle, but this takes longer and the organisms are easily disturbed during pouring or filtering. Sedimentation should not be considered a means of disinfection and should be used only as a last resort or in an extreme tactical situation.

5. **WATER GENERATOR. (WSVX.02.03f)**

a. General. Ice is a better source for obtaining water than snow because of higher water content. It takes approximately 3-4 cups of snow for each cup of water.

(1) Never let the generator completely run out of snow or ice.

(2) Once started the generator will supply more than enough water for 2 people.

b. Construction. Material will be determined by what you are carrying: parachute, plastic bag, T-shirt, or bark.

(1) If wood is available, gather three poles, approximately six feet long and three inches in diameter. Tie them together forming a tripod.

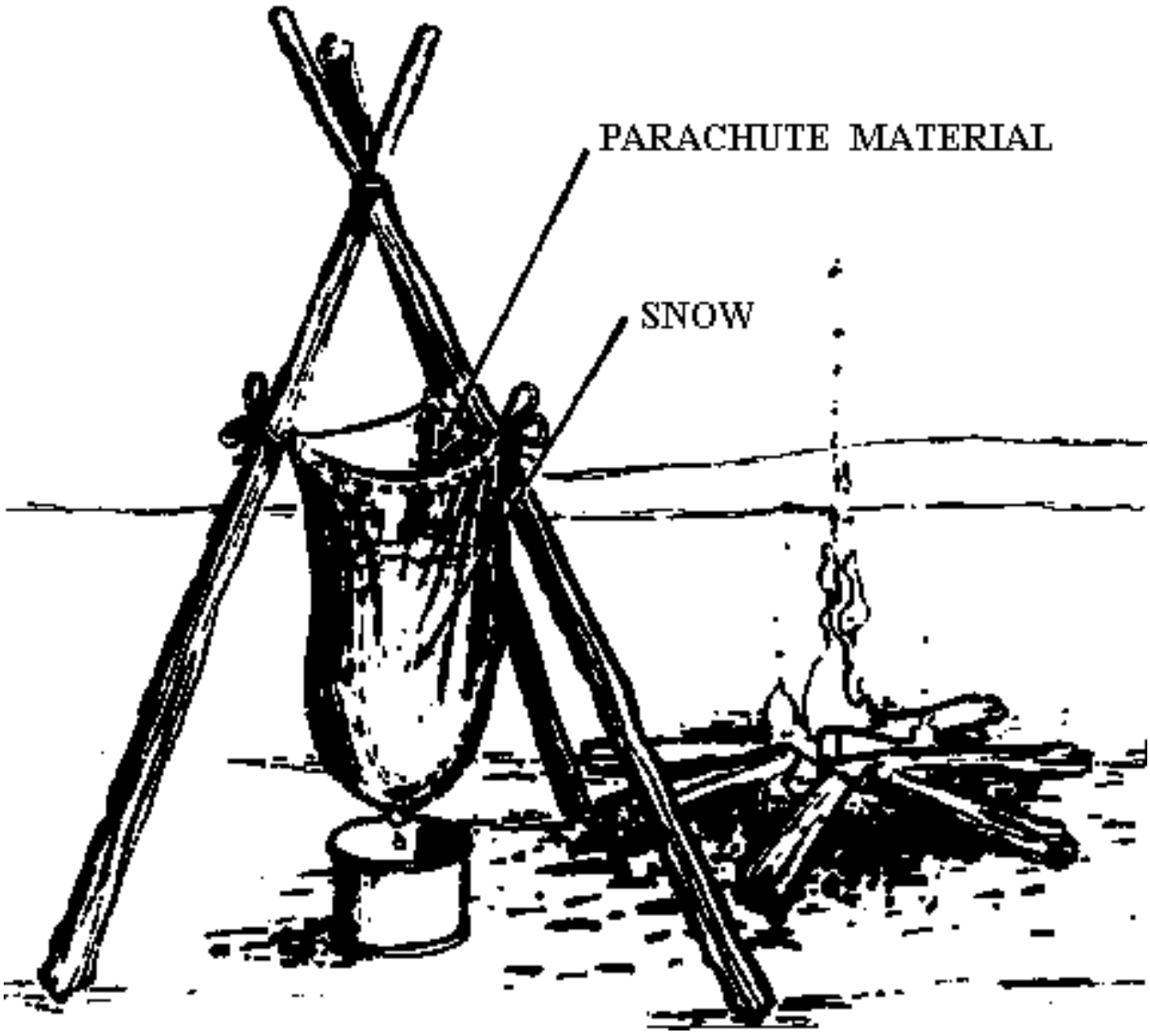
(2) Fill the material (T-shirt, parachute, or plastic bag) with snow and tie completely shut. Constantly bang it on the ground to compact the snow, making it dense. Add more snow and repeat the process until the material is completely full.

(3) Tie the material of snow to the tripod and place near the fire. Ensure the material is safe from being burnt from the fire.

(4) In about 1/2 hour, the generator will start to drip from one spot. Place any kind of container under this drip.

(5) Add snow as necessary.

(6) If wood is not readily available to construct a tripod, a variation can be constructed by securing a single pole to a tree. Tie the bag of snow to this single pole. Snow can be placed on bark. The bark can be placed near the fire at a slight angle and the melted water collected.



WATER GENERATOR

REFERENCE:

FM 21-76, Survival, 1992.
Paul Auerbach, Wilderness Medicine, 3rd Edition, 1995
Howard Backer MD, MPH, Field Water Disinfection, 1999
Eric Cudnohoske, Wisconsin Pharmacal Company, 1999

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WSVX.02.04
WSVX.02.05
02/06/05

STUDENT HANDOUT

EXPEDIENT SHELTERS AND FIRES

TERMINAL LEARNING OBJECTIVE

(1) In a cold weather mountainous environment, construct shelters, in accordance with the references. **(WSVX.02.04)**

(2) In a cold weather mountainous environment, construct fires, in accordance with the references. **(WSVX.02.05)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of reference, list in writing the characteristics of a safe expedient shelter, in accordance with the references. **(WSVX.02.04a)**

(2) Without the aid of references, list in writing the hazards to avoid when using natural shelters, in accordance with the references. **(WSVX.02.04b)**

(3) Without the aid of references, list in writing man-made snow survival shelters, in accordance with the references. **(WSVX.02.04c**)

(4) In a cold weather mountainous environment, list in writing the tactical fire lay, in accordance with the references. **(WSVX.02.05a)**

(5) In a cold weather mountainous environment, start a fire using a primitive method, in accordance with the references. **(WSVX.02.05b**)

OUTLINE

1. **BASIC CRITERIA FOR SHELTER**. **(WSVX.02.04a)** Any type of shelter, whether it is a permanent building, tentage, or a survival shelter must meet six basic criteria to be safe and effective. The goal is you must **P**repare **F**or **S**ome **Ve**ry **H**ard **D**ays.

   a. Protection From the Elements. The shelter must provide protection from rain, snow, wind, sun, etc.

b. Free from Natural Hazards. Shelters should not be built in areas of avalanche hazards, under rock fall or "standing dead" trees, which have the potential to fall on your shelter.

c. Stable. Shelters must be constructed to withstand the pressures exerted by severe weather.

d. Ventilation. Ventilation must be maintained, especially if burning fuel for heat. This prevents the accumulation of carbon monoxide. Ventilation is also needed for carbon dioxide given off when breathing.

e. Heat Retention. It must have some type of insulation to retain heat, thus preventing the waste of fuel.

f. Drying Facility. A drying facility must be constructed to dry wet clothes.

2. **NATURAL SHELTERS**. Natural shelters require less work or time.

a. Caves or Rock Overhangs. Can be modified by laying walls of rocks, logs or branches across the open sides.

b. Hollow Logs. Can be cleaned or dug out, then enhanced with ponchos, tarps or parachutes hung across the openings.

c. Hazards of Natural Shelters. **(WSVX.02.04b)**

(1) Animals. Natural shelters may already be inhabited (i.e. bears, coyotes, lions, rats, snakes, etc.). Other concerns from animals may be disease from scat or decaying carcasses.

(2) Lack of Ventilation. Natural shelters may not have adequate ventilation. Fires may be built inside for heating or cooking but may be uncomfortable or even dangerous because of the smoke build up.

(3) Gas Pockets. Many caves in a mountainous region may have natural gas pockets in them.

(4) Instability. Natural shelters may appear stable, but in reality may be a trap waiting to collapse.

3. **MAN-MADE SHELTERS**. **(WSV.02.04c)**

a. Snow Wall.

b. Snow Cave.

c. Tree-pit Snow Shelter.

d. Snow Trench.

e. A-frame Shelter.

f. Fallen Tree Bivouac.

g. Snow Coffin

4. **CONSTRUCTION OF MAN-MADE SHELTERS**.

a. Considerations.

(1) Group size.

(2) A low silhouette and reduced living area will improve heat retention.

(3) Avoid exposed hilltops, valley floors, moist ground, and avalanche paths.

(4) Create a thermal shelter by applying snow, if available, to roof and sides of shelter.

(5) Locate in vicinity of fire wood, water, and signaling, if necessary.

(6) How much time and effort is needed to build the shelter?

(7) Can the shelter adequately protect you from the elements?

(8) When in a tactical environment, you must consider the following:

(a) Provide concealment from enemy observation.

(b) Plan escape routes.

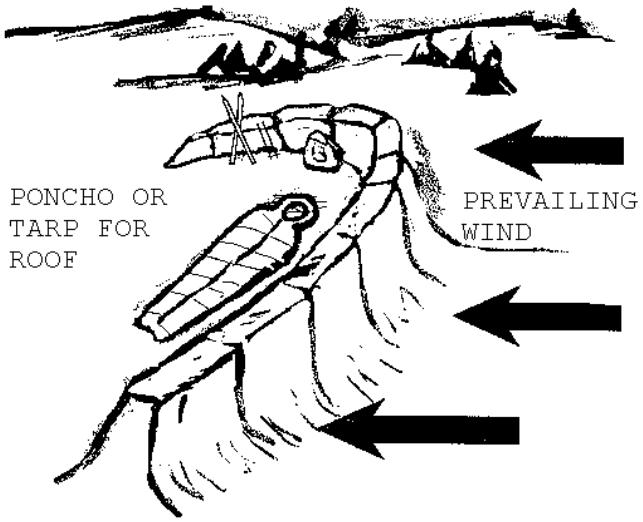
b. Snow Wall. The snow wall is an extremely expedient shelter for one or two men. This shelter is constructed when the elements will not afford time to construct a better shelter.

(1) Basic principles for construction.

(a) Determine wind direction.

(b) Construct a wall of compacted snow in the shape of a horseshoe to shield you from the wind. The wall should be at least 3 feet high and as long as your body.

(c) A poncho or tarp can be attached to the top of the wall with the other end secured to the ground for added protection. Skis, poles, branches, and equipment can be used for added stability.



SNOW WALL

c. Snow Cave. A snow cave is used to shelter 1-16 men for extended periods of time. There must be a well-compacted snow base of at least 6 feet to construct.

(1) Basic principles for construction.

(a) Dig down into the snow until the desired tunnel entrance has been reached. Place all excavated snow on top of the shelter for added strength.

(b) Cut an entrance opening into the snow approximately 3 feet by 3 feet.

(c) Continue to dig out cave while removing excess snow out of the entrance. Shape the roof into a dome. If a bluish color appears through the snow in the roof, stop, there is not enough snow to support the roof.

(d) Create a cooking/working self and a sleeping bench inside the shelter.

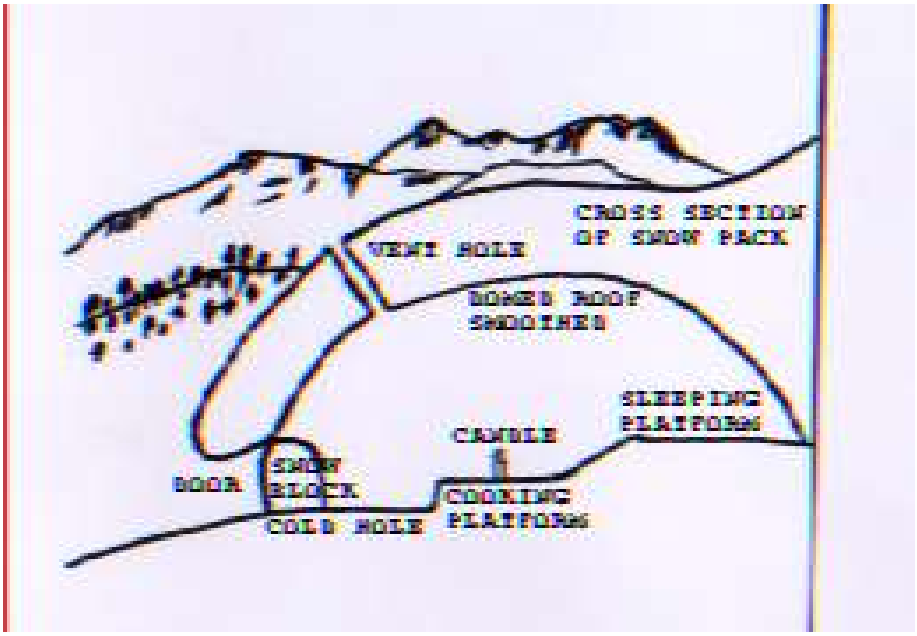
(e) A ventilation hole should be dug through the roof at a 45-degree angle above the entrance. A ski pole or branch is left in the hole to mark the hole and allow clearing should the ventilation hole become clogged. A pine bough branch can be placed into the outside of the roof above the hole to aid in keeping the hole clear during falling snow. During the day and at night there should be an Arctic century posted for safety in case the cave collapses.

(f) Personnel who are digging will become wet from perspiration while digging inside the cave. Personnel that are digging should wear a minimum amount of clothing with a protective layer.

(g) Once the cave has been dug, completely fill in the entrance hole with snow block. Pack in loose snow between the cracks and allow it to harden for approximately 2-3 hours, weather dependant. After it has hardened, cut out a small entrance hole.

(h) Snow caves can be heated by a candle, which will raise the inside temperature, approximately 2 degrees. If a candle is left burning while individuals sleep, a fire watch must remain posted to reduce the danger of asphyxiation. Burning stoves to heat a cave will cause snow to melt and should be avoided.

(i) Packs, poncho, or snow blocks can be used to block the entrance to the cave.



SNOW CAVE

d. Tree-pit Snow Shelter. A tree-pit snow shelter is designed for 1-3 men for short periods of time. It provides excellent overhead cover and concealment and should be used for LP/Ops.

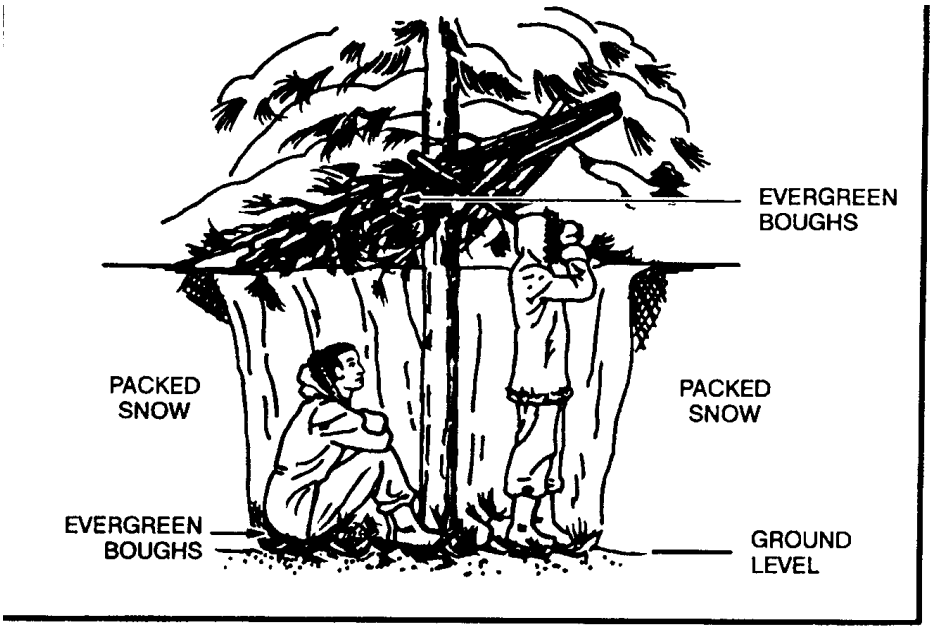
(1) Basic principles for construction.

(a) Locate a tree with bushy branches that provides overhead cover.

(b) Dig out the snow around the tree trunk until you reach the depth and diameter desired, or until you reach the ground.

(c) Find and cut other evergreen boughs. Place them over the top of the pit for additional concealment. Do not utilize bough from the tree you are under.

(d) Place evergreen boughs in the bottom of the pit for insulation.



TREE-PIT SHELTER

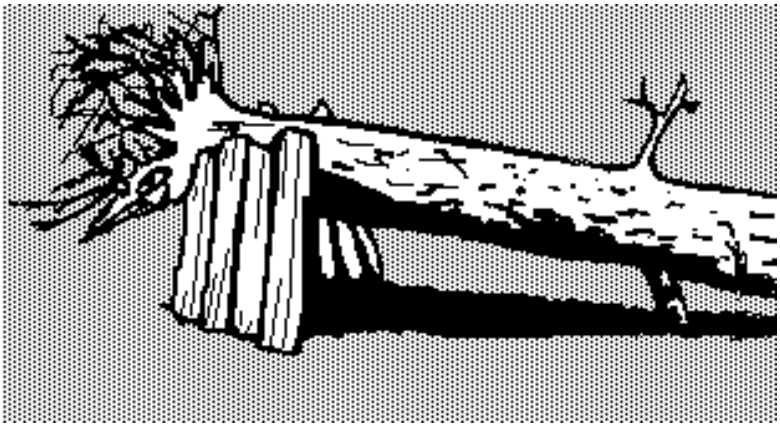
e. Fallen Tree Bivouac. The fallen tree bivouac is an excellent shelter because most of the work has already been done.

(1) Ensure the tree is stable prior to constructing.

(2) Branches on the underside are cut away making a hollow underneath.

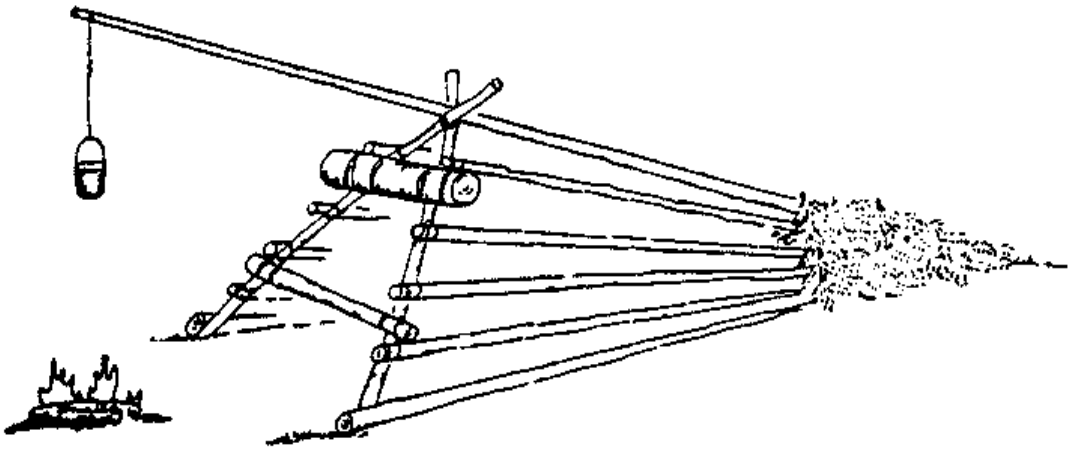
(3) Place additional insulating material to the top and sides of the tree.

(4) A small fire is built outside of the shelter.



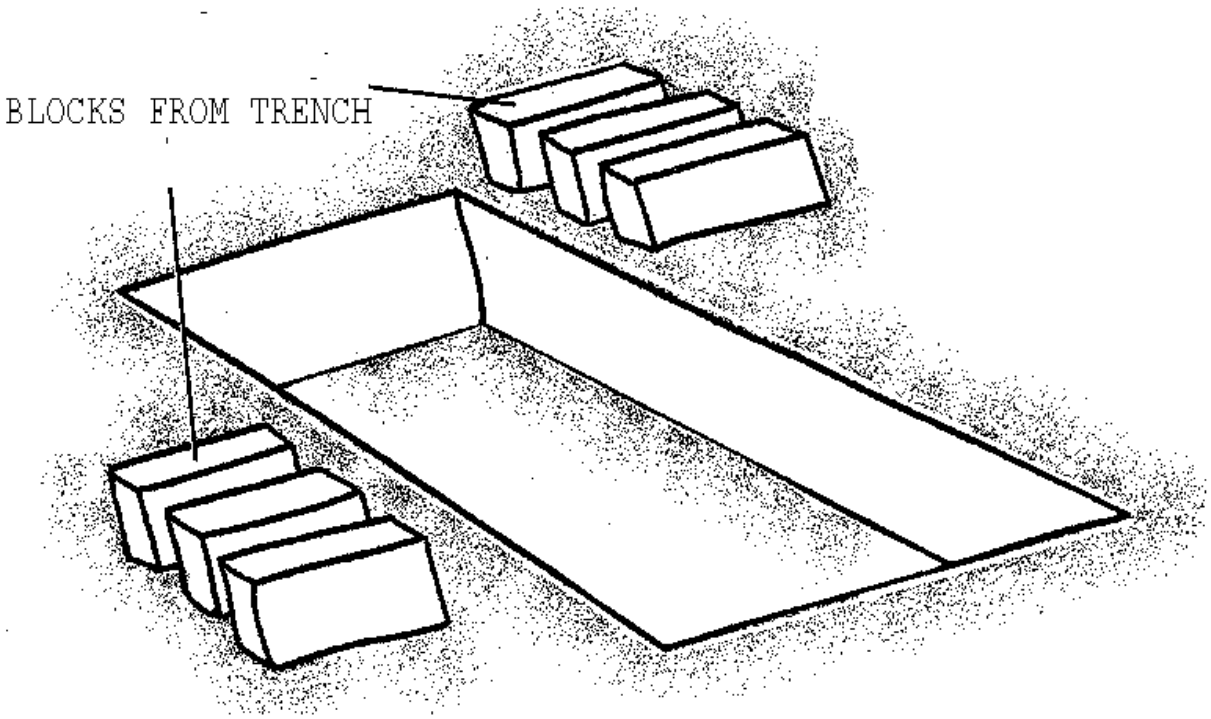
FALLEN TREE BIVOUAC

f. A-Frame Shelter. An A-Frame shelter is constructed for 1-3 individuals. After the framework is constructed, pine bough/tentage is interwoven onto the frame and snow is packed onto the outside for insulation.



A-FRAME

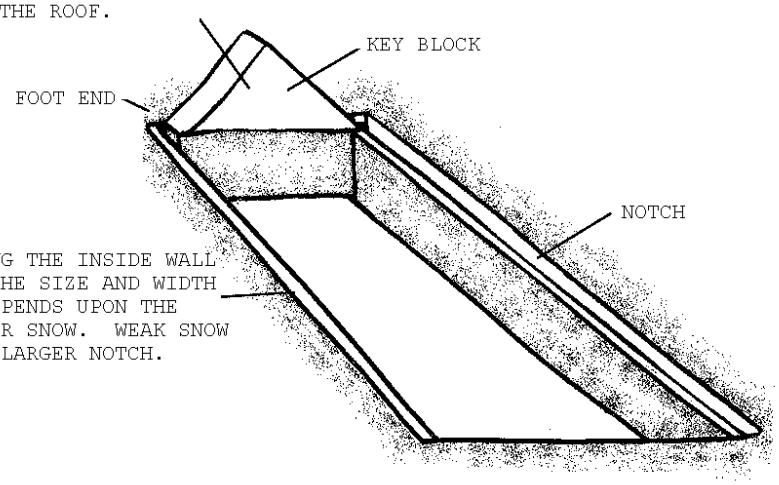
g. Snow Trench. A snow trench is a short-term shelter used on extremely hard pack snow and when trees or building materials are not available, (i.e., alpine and glacier environments). Blocks of snow or ice are cut and placed to build this shelter.



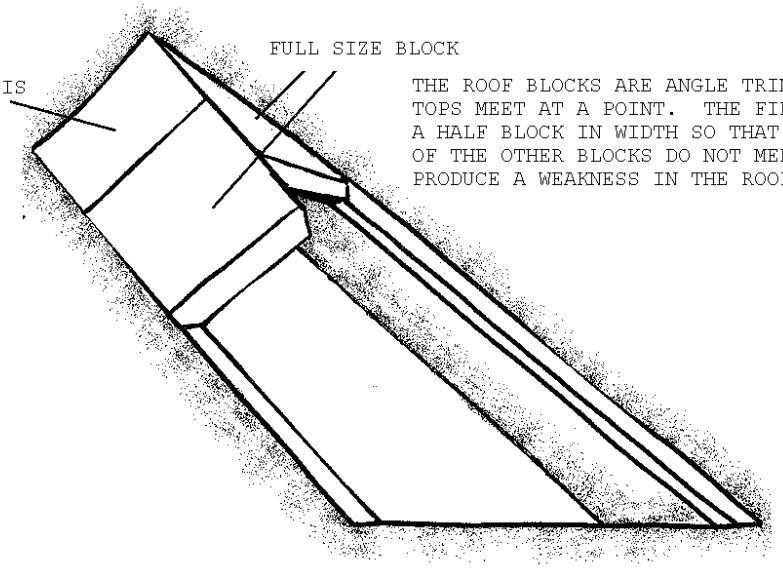
SNOW TRENCH (FIRST STEP)

THE TRENCH SHOULD BE ORIENTED SO THAT THE WIND BLOWS FROM THE FOOT SIDE AS THIS WOULD MINIMIZE SNOW EROSION. A DAILY INSPECTION SHOULD BE MADE TO AVOID A COLLAPSE OF THE ROOF DURING A WHITEOUT.

A TRIANGULAR KEY BLOCK IS PLACED VERTICALLY AT THE FOOT END OF THE TRENCH. THIS WILL SERVE AS THE END SUPPORT OF THE ROOF.



CUT A NOTCH ALONG THE INSIDE WALL OF THE TRENCH. THE SIZE AND WIDTH OF THIS NOTCH DEPENDS UPON THE CONDITION OF YOUR SNOW. WEAK SNOW WOULD REQUIRE A LARGER NOTCH.



THE ROOF BLOCKS ARE ANGLE TRIMMED SO THAT THE TOPS MEET AT A POINT. THE FIRST ROOF BLOCK IS A HALF BLOCK IN WIDTH SO THAT THE JOINT LINES OF THE OTHER BLOCKS DO NOT MEET AS THIS WOULD PRODUCE A WEAKNESS IN THE ROOF

SNOW TRENCH

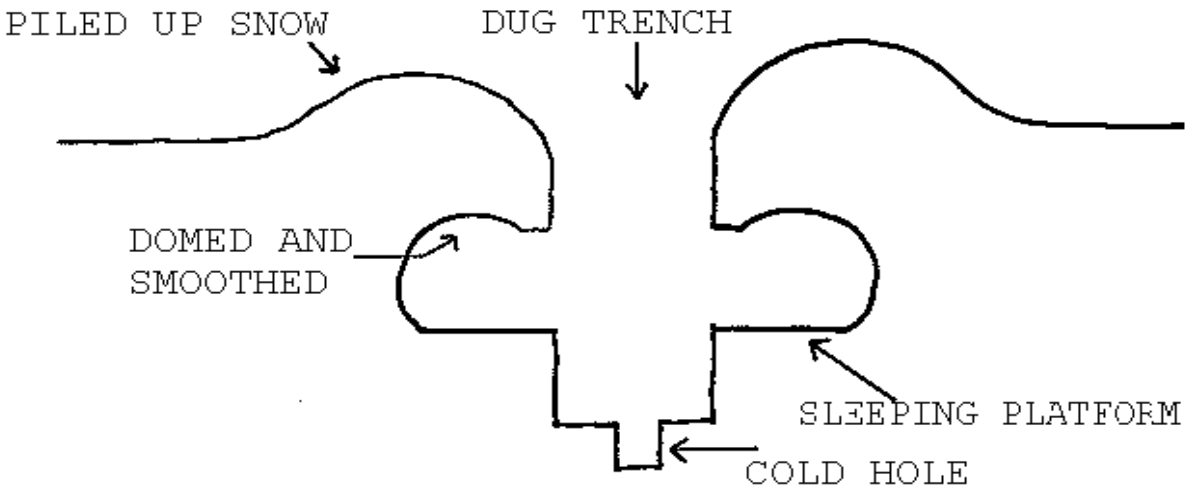
h. Snow Coffin. A snow coffin is built for 1-4 men for extended periods of time. It is a variation of the snow trench and A-frame, which requires at least 4 feet of compacted snow.

(1) Basic principles for construction.

(a) Dig a trench into the snow approximately 3 feet wide, 8-12 feet long, and 4 feet deep.

(b) Dig a cold hole into the floor of the trench and sleeping platforms (coffins) off the sides of the trench.

(c) Cover the top of the trench for added protection with either an A-frame or poncho/tarp.



SNOW COFFIN

i. This table can be used as a general guideline to determine which shelter to construct.

SNOW PACK	SNOW DEPTH	EST. HRS. TO CONSTRUCT	RECOMMENDED SHELTER
LOOSE	< 2 FEET	2	A-FRAME
COMPACTED	4-6 FEET	2-3	SNOW COFFIN
COMPACTED	> 6 FEET	3	SNOW CAVE
ICED	N/A	2-3	SNOW TRENCH
N/A	N/A	1-2	FALLEN TREE
N/A	> 4 FEET	1-2	TREE-PIT
N/A	> 2 FEET	30 MIN	SNOW WALL

5. **FIRES**. Fires fall into two main categories: those built for cooking and those built for warmth and signaling. The basic steps are the same for both: preparing the fire lay, gathering fuel, building the fire, and properly extinguishing the fire.

   a. Preparing the fire lay. There are two types of fire lays: fire pit and Dakota hole. Fire pits are probably the most common.

      (1) Without a platform in the snow, the fire will sink. Create a platform as follows:

         (a) Lay several green logs side by side for the size of your fire.

         (b) Build your fire on top of the platform or,

         (c) Dig down to the earth and start fire.

         (d) Create a windbreak if possible.

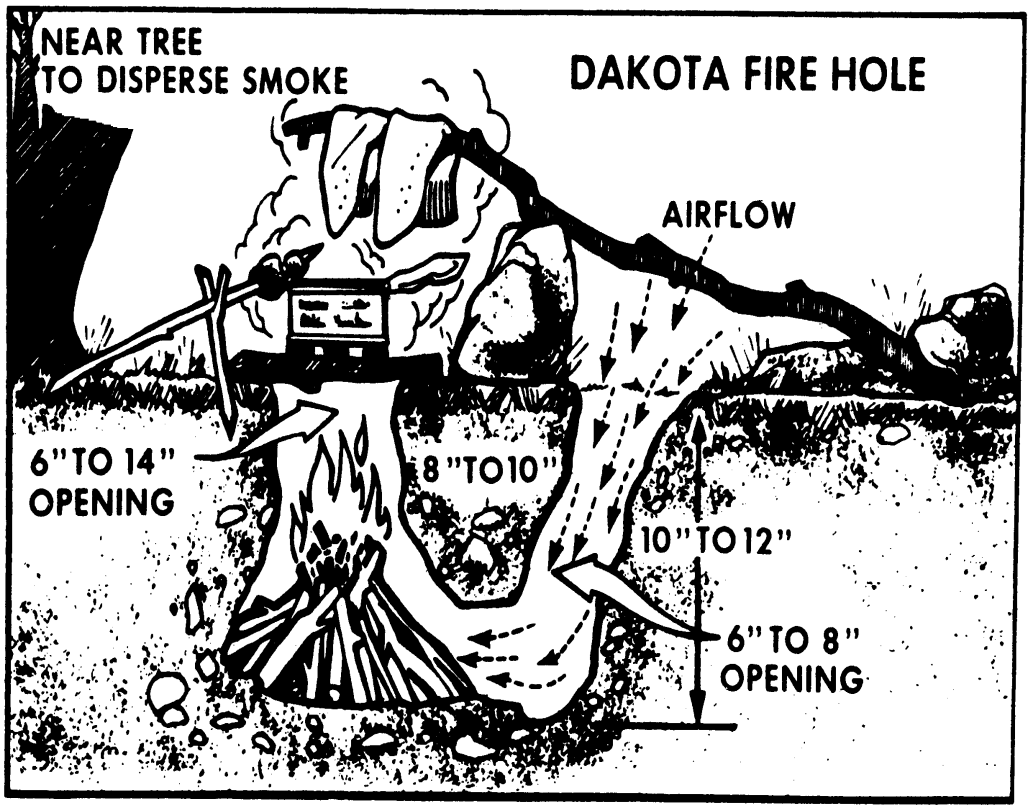
         (e) Avoid using wet rocks. Heat acting on the dampness in sandstone, shale, and stones from streams may cause them to explode.

      (2) Dakota Hole. **(WSV.02.05a)** The Dakota Hole is a tactical fire lay. Although no fire is 100% tactical.

         (a) Reduces the signature of the fire by placing it below ground.

         (b) By creating a large air draft, the fire will burn with less smoke than the fire pit.

         (c) It is easier to light in high winds.



DAKATA HOLE

b. Gather Fuel. Many Marines take shortcuts when gathering firewood. Taking a few extra minutes can mean the difference between ease and frustration when building a fire.

(1) Tinder. Tinder is the initial fuel. It should be fine and dry. Gather a double handful of tinder for the fire to be built and an extra double handful to be stored in a dry place for the following morning. Dew can moisten tinder enough to make lighting the fire difficult. Some examples of tinder are:

(a) Shredded cedar/juniper bark, pine needles.

(b) Slivers shaved from a dry stick.

(c) Natural fibers from equipment supplemented with pine pitch (i.e., cotton battle dressing).

(d) Cotton balls and petroleum jelly or Char-cloth.

(2) Kindling. This is the material that is ignited by the tinder that will burn long enough to ignite the fuel.

(a) Small sticks/twigs pencil-thick up to the thickness of the thumb. Ensure that they are dry.

(b) Due to a typically large resin content, evergreen limbs often make the best kindling. They burn hot and fast, but typically do not last long.

(3) Fuel Wood. Fuel Wood is used to keep the blaze going long enough to fulfill its purpose. Ideally, it should burn slow enough to conserve the woodpile, make plenty of heat, and leave an ample supply of long-lasting coals.

(a) Firewood broken from the dead limbs of standing trees or windfalls held off the ground will have absorbed less moisture and therefore should burn easily.

(b) Refrain from cutting down live, green trees.

(c) Softwoods (evergreens and conifers) will burn hot and fast with lots of smoke and spark, leaving little in the way of coals. Hardwoods (broad leaf trees) will burn slower with less smoke and leave a good bed of coals.

(d) Learn the woods indigenous to the area. Birch, dogwood, and maple are excellent fuels. Osage orange, ironwood, and manzanita, though difficult to break up, make terrific coals. Aspen and cottonwood burn clean but leave little coals.

(e) Stack your wood supply close enough to be handy, but far enough from the flames to be safe. Protect your supply from additional precipitation.

(f) If you happen to go down in an aircraft that has remained intact, a mixture of gas and oil may be used. Use caution when igniting this mixture.

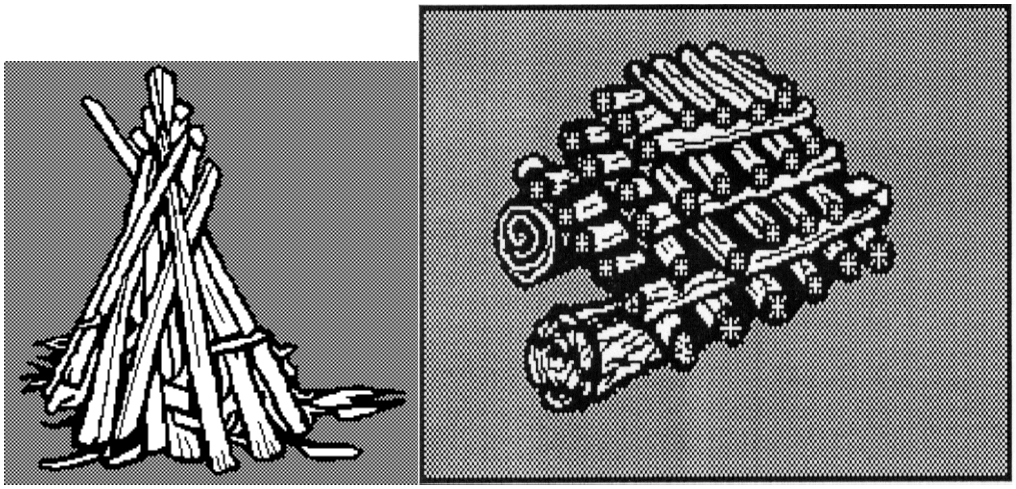
c. Building the Fire. The type of fire built will be dependent upon its intended use, either cooking, heating, or signaling.

(1) Cooking Fires. Cooking fires are used to cook food and boil water.

(a) Teepee Fire. The teepee fire is used to produce a concentrated heat source, primarily for cooking. Once a good supply of coals can be seen, collapse the teepee and push embers into a compact bed.

(2) Heating Fires. Heating fires are used to dry clothing and provide a means of signaling.

(a) Pyramid Fire. Pyramid fires are used to produce large amounts of light and heat, to dry out wet wood, and provide coals for cooking.



TEEPEE FIRE **PYRAMID FIRE**

d. Starting Fires. Lighting fires falls into two categories: modern methods and primitive methods.

(1) Modern Methods. Modern igniters use modern devices we normally think of to start a fire. Reliance upon these methods may result in failure during a survival situation. These items may fail when required to serve their purpose.

(a) Matches and Lighters. Ensure you waterproof these items.

(b) Convex Lens. Binocular, camera, telescopic sights, or magnifying lens are used on bright, sunny days to ignite tender.

(c) Flint and Steel. Some types of flint & steel designs will have a block of magnesium attached to the device, which can be shaved onto the tinder prior to igniting. Other designs may have magnesium mixed into the flint to produce a higher quality of spark.

(2) Primitive Methods. Primitive fire methods are those developed by early man. There are numerous techniques that fall into this category. The only method that will be taught at MCMWTC is the Bow & Drill.

(3) Bow & Drill. **(WSV.02.05b)** The technique of starting a fire with a bow & drill is a true field expedient fire starting method, which requires a piece of cord and knife from your survival kit to construct. The components of the bow & drill are bow, drill, socket, fire board, ember patch, and bird's nest.

(a) Bow. The bow is a resilient, green stick about 3/4 of an inch in diameter and 30-36 inches in length. The bowstring can be any type of cord, however, 550 cord works best. Tie the string from one end of the bow to the other, without any slack.

(b) Drill. The drill should be a straight, seasoned hardwood stick about 1/2 to 3/4 of an inch in diameter and 8 to 12 inches in length. The top end is tapered to a blunt point to reduce friction generated in the socket. The bottom end is slightly rounded to fit snugly into the depression on the fireboard.

(c) Socket. The socket is an easily grasped stone or piece of hardwood or bone with a slight depression on one side. Use it to hold the drill in place and to apply downward pressure.

(d) Fire board. The fireboard is a seasoned softwood which should be 3/4 of an inch thick. Cut a depression 3/4 of an inch from the edge on one side of the fireboard. Cut a V-shape notch from the edge of the fireboard into the center of the depression. This notch is designed to collect and form an ember, which will be used to ignite the tinder.

(e) Ember Patch. The ember patch is made from any type of suitable material (i.e., leather, aluminum foil, or bark). It is used to catch and transfer the ember from the fireboard to the bird's nest.

(f) Birds Nest. The bird's nest is a double handful of tinder, which will be made into the shape of a nest. Tinder must be dry and finely shredded material (i.e., outer bark from juniper/cedar/sage brush or inner bark from cottonwood/aspen or dry grass/moss). Lay your tinder out in two equal rows about 4 inches wide and 8-12 inches long. Loosely roll the first row into a ball and knead the tinder to further break down the fibers. Place this ball perpendicular onto the second row of tinder and wrap. Knead the tinder until all fibers of the ball are interwoven. Insert the drill half way into the ball to form a partial cylinder. This is where the ember will be placed.

(4) Producing a fire using the bow & drill.

(a) Place the ember patch under the V-shaped notch.

(b) Assume the kneeling position, with the left foot on the fireboard near the depression.

(c) Load the bow with the drill. Ensure the drill is between the wood of the bow and bow string. Place the drill into the depression on the fireboard. Place the socket on the tapered end of the drill.

(d) Use the left hand to hold the socket while applying downward pressure.

(e) Use the right hand to grasp the bow. With a smooth sawing motion, move the bow back and forth to twirl the drill.

(f) Once you have established a smooth motion, smoke will appear. Once smoke appears, apply more downward pressure and saw the bow faster.

(g) When a thick layer of smoke has accumulated around the depression, stop all movement. Remove the bow, drill, and socket from the fireboard, without moving the fireboard. Carefully remove your left foot off the fireboard.

(h) Gently tap the fireboard to ensure all of the ember has fallen out of the V-shaped notch and is lying on the ember patch. Remove the fireboard.

(i) Slowly fan the black powder to solidify it into a glowing ember. Grasping the ember patch, carefully drop the ember into the cylinder of the bird's nest.

(j) Grasp the bird's nest with the cylinder facing towards you and parallel to the ground. Gently blow air into the cylinder. As smoke from the nest becomes thicker, continue to blow air into the cylinder until fire appears.

(5) Trouble Shooting the Bow & Drill.

(a) The drill will not stay in depression- Apply more downward pressure and/or increase width/depth of depression.

(b) The drill will not twirl- Lessen the amount of downward pressure and/or tighten bowstring.

(c) Socket smoking- decrease the amount of downward pressure. Wood too soft when compared to hardness of drill. Add some lubrication: animal fat, oil, or grease.

(d) No smoke- Wood may not be seasoned. Check drill to ensure that it is straight. Keep left hand locked against left shin while sawing.

(e) Smoke but no ember- V-shaped notch not cut into center of the depression or not enough heat generated.

(f) Bowstring runs up and down drill- Use a locked right arm when sawing. Check drill to ensure that it is straight. Ensure bowstring runs over the top of the left boot.

(g) Birds nest will not ignite- Tinder not dry. Nest woven too tight. Tinder not kneaded enough. Blowing too hard (ember will fracture).

e. **Extinguishing the Fire**. The fire must be properly extinguished. This is accomplished by using the drown, stir, and feel method.

(1) **Drown** the fire by pouring at water in the fire lay.

(2) **Stir** the ember bed to ensure that the fire is completely out.

(3) Check the bed of your fire by **feeling** for any hot spots.

(4) If any hot spots are found, start the process all over again.

REFERENCE:

1. FM 21-76, Survival, 1992.
2. Chris Janowski, A Manual that could save you life, 1996.
3. John Wiseman, SAS Survival Guide, 1993.
4. AFP 36-2246, Aircrew Survival, 1996.

UNITED STATES MARINE CORPS

Mountain Warfare Training Center
Bridgeport, California 93517-5001

MSVX.01.02
2/6/05

STUDENT HANDOUT

CORE VALUES AND MOUNTAIN LEADERSHIP CHALLENGES

LESSON PURPOSE: The purpose of this period of instruction is to emphasize the vital role of leadership in the conduct of successful operations and to promote among leaders at all levels an understanding of the problems common to units operating in a summer mountainous environment. This lesson relates to all of the training that you will receive here at MCMWTC.

OUTLINE

"One of the most important tenets of cold weather operations is that strong and consistent leadership is essential to survival and to minimize injuries."
-FMFM 7-21 "Tactical Fundamentals for Cold Weather Warfighting"

1. **POSITIVE LEADERSHIP AND THE RIGHT ATTITUDE**. Leadership must be by example. At first, harsh and unfamiliar conditions tend to be frightening. Marines will find themselves up against many challenges they have never met before and the environment will constantly remind them that they can become a casualty if they make mistakes. Aggressive leadership, which consistently meets and overcomes the challenges of the environment, is essential to mission accomplishment. There will be two enemies to contend with: the enemy soldier and the environment itself. The first step towards defeating these enemies is getting your Marines in the right mental attitude. The leader must maintain a positive attitude towards the mission, his Marines, and the equipment they have to carry out the job. You can be defeated psychologically, if you are not aware of the symptoms of a poorly motivated unit.

    a. Core Values applied in a survival situation. Core value are very applicable to leadership in a survival situation. In the absence of constant adherence to our core values, subordinate Marines may suffer the consequences of injury and in extreme cases, DEATH.

    b. Honor. Honor is integrity, responsibility, and accountability. Without honor in this type of environment, decisions are made with inaccurate and/or misleading information. Dishonorable actions or intentions ultimately lead to unethical behavior...trust between Marines will erode, dependability will become unimportant, and the resulting consequences to energy conservation will greatly affect a unit's cohesion and ability to accomplish its mission.

    c. Courage. Courage is doing the right thing for the right reason. Courage in this type of environment for small unit leaders to take charge of their unit. The added stress and pressure induced in mountainous terrain makes the tough decisions even tougher to

make: **courageous leaders take that extra step.** Trust and confidence in leadership is built upon thorough training to ensure their men are capable of overcoming the fear and uncertainty of enemy and the harsh environment. A few examples of courage are:

(1) Ensuring Marines have the proper clothing on for the task they are performing.

(2) Ensuring Marines are maintaining security, regardless of weather conditions.

(3) Preventing lethargy and laziness from affecting decision making skills.

(4) Rising to the challenges of a harsh environment, and beating the cold weather with solid leadership.

d. Commitment. Commitment is devotion to the Corps and your fellow Marines. Without commitment, unit cohesion will break down. Marines must know that their safety and well-being rests upon others. Likewise, Marines must provide the same safety and well-being for themselves and others. Only through this type of commitment will a unit successfully accomplish it mission.

2. **LEADERSHIP CHALLENGES PECULIAR TO MOUNTAIN OPERATIONS**

Although most leadership challenges in a temperate environment are the same in cold weather, some problems will arise which must be quickly corrected.

a. Cocoon-like Existence. Many men, when bundled up in successive layers of clothing and with their head covered by a hood, tend to withdraw within themselves and to assume a "cocoon-like existence". When so clothed, the individual's hearing and field of vision are greatly restricted and he tends to become oblivious to his surroundings. His mental faculties become sluggish and although he looks, he does not see. Leaders must recognize and overcome these symptoms. Additionally, the leader needs to watch for the growth of lethargy within himself and must be alert to prevent it. He must always appear alert to his men and prevent them from sinking into a state of cocoon-like existence.

(1) If your Marines withdraw into a shell or become moody and depressed, get them involved in conversations with each other.

(2) Don't accept an excuse for not carrying out an order. Cold weather training all too often becomes a camping trip. Leadership must challenge their Marines to train as they would fight.

(3) If Marines still display a "Cocoon-like" existence, have them engage in physical activity.

b. Individual and Group Hibernation. This problem is similar in manifestation of withdrawal from the environment. It is generally recognized by a tendency of individuals to seek the comfort of sleeping bags, and by the group remaining in tents or other shelter at the neglect of their duties. In extreme cases, guard and security

measures may be jeopardized. Many times, it is the leadership that violates this, thus destroying the unit's trust and confidence.

(1) The leader must ensure that all personnel remain alert and active. Ridged insistence upon proper execution of all military duties and the prompt and proper performance of the many group "chores" is essential.

(2) Be alert for individuals who will place their own physical comfort ahead of their assigned duties. Remind them that their mission as Marines is to fight, and to do so successfully requires that weapons and equipment be maintained in working order.

c. Personal Contact and Communications. It is essential that each individual and group be kept informed of what is happening. Due to the deadening of the senses typically encountered in cold weather, a man left alone may quickly become oblivious to his surroundings, lose his sense of direction, his concern for his unit, and in extreme cases, for himself. He may become like a sheep and merely follows along, not knowing or caring whether his unit is advancing or withdrawing. Each commander must take strong measures to ensure that small unit leaders keep their subordinates informed. This is particularly true of the company commanders keeping their platoon commanders informed, of platoon commanders informing their squad leaders, and the squad leaders informing their men. General information is of value, but the greatest importance must be placed on matters of immediate concern and interest to the individual. The chain of command must be rigidly followed and leaders must see that no man is left uninformed as to his immediate surrounding and situation.

(1) If your Marines find it hard to remember things they have been taught, show patience and review orders, drills and SOP's. Keep their minds busy.

(2) Tempers normally flare up during this type of training, so expect and be prepared to deal with it when it comes. Maintain your sense of humor, lead by example, and don't let unanticipated problems get the best of you.

d. Time/Distance Factors. Mountain operations doctrine recommends that tactical commanders be given every opportunity to exploit local situations and take the initiative when the opportunity is presented. Because of the increased amount of time involved in a movement and the additional time required to accomplish even simple tasks, deviation from tactical plans is difficult. Tactical plans are developed after a thorough reconnaissance and detailed estimate of the situation. Sufficient flexibility is allowed each subordinate leader to use his initiative and ingenuity in accomplishing his mission. Time lags are compensated for by timely issuance of warning orders, by anticipating charges in the tactical situation, and the early issuance of frag orders. Recognition of time/distance factors is the key to successful tactical operations in cold weather mountainous regions.

(1) Time-Distance Formula (TDF). This formula is designed to be a guideline and should not be considered as the exact amount of time required for your movement. Furthermore, this formula is for use in ideal conditions. The TDF

is made for troop on foot in the summertime or troop on skis in the wintertime. If on foot in deep snow, multiply the total time by 2.

(a) 3 km/ph + 1 hour for every 300 meters ascent; and/or +1 hour for every 800 meters descent.

e. Conservation of Energy. Two environments must be overcome in mountainous regions; one created by the enemy and the second created by the climate and terrain. The climatic environment must not be permitted to sap the energy of the unit to a point where it can no longer cope with the enemy. The leader must be in superior physical condition. He cannot expend the additional energy required by his concern for his men and still have the necessary energy to lead and direct his unit in combat. He must remember that there are seldom any tired units, just ***TIRED COMMANDERS!***

(1) IF the unit can effectively fight upon reaching the objective, then it has properly conserved energy.

"It has been repeatedly demonstrated that at temperatures lower than -10F, all other problems lose significance in the personal battle for SURVIVAL"

2. **Survival ASPECTS OF LEADERSHIP**. When dealing with leadership challenges in a survival situation, the foremost weapon a leader must employ is his vigilance: a leader's attention should be focused on ensuring all Marines of the unit are contributing to the overall success of the situation.

a. Cohesion. As a leader, you must ensure that all members of the team are working towards the survivability of the unit. You can not allow individuals or small groups to formulate their own goals or plan of action.

b. Self-Worth. A Marine without self-worth is a Marine who does not value living. Leadership is a critical; factor in building self-worth. Tasks must be found for each Marine in which best suits their situation while attempting to receive positive results. (i.e., A man with a broken leg can monitor the fire, A man with a broken arm can still procure water for the unit). This will make each and every Marine feel useful and not a burden to the other members, regardless of their individual situation.

c. Natural Reactions to Stress. Leadership must quickly identify natural reactions to signs of stress his Marines may be displaying (i.e., Fear, Anxiety, Guilt, Depression). Failure to recognize these signs early will result in injuries, illness, or death which will reduce the unit's combat effectiveness. Corrective action must be taken immediately4

d. Will to Survive. The will to survive is a "mind-set" that must be instilled and reinforced within all Marines. Without the "will to survive", Marines will not succeed. The following tools can aid to develop this "mind-set".

(1) The Code of Conduct.

(2) Pledge of Allegiance.

(3) Faith in America.

(4) Patriotic Songs

(5) Spiritual Faith.

4. **CONCLUSION**. Paramount to survival is preparation and training that will foster trust and confidence in a unit's capability to beat the elements and the enemy. Poorly trained units will not possess the "Will to Survive" as they lack the fundamental skills to overcome the survival situation. Individual confidence is built through challenging and realistic training that teaches a
Marine how to survive and how to effectively employ cold weather equipment.

"Spirit of confidence comes form training and tradition... each individual Marine, because of the fighting tradition of the Corps and the toughness of training, is confident of his own ability and that of his buddies... This confidence in themselves and one anther very often spells the difference between victory and SURVIVAL and defeat and annihilation." FMFM 1-0 "Leading Marines"

REFERENCE:

1. ALMAR 439196, Core Values
2. MCDP 1-0, Leading Marines
3. FMFM 7-21, Tactical Fundamentals for Cold Weather Warfighting

UNITED STATES MARINE CORPS

Mountain Warfare Training Center
Bridgeport, California 93517-5001

WSVX02.06
2/6/05

STUDENT HANDOUT

SURVIVAL SIGNALING AND RECOVERY

TERMINAL LEARNING OBJECTIVE. In a cold weather mountainous environment, conduct survival recovery, in accordance with the references. **(WSVX.02.06)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, describe in writing the audio international distress Signal, in accordance with the references. **(WSVX.02.06a)**

(2) Without the aid of references, describe in writing the visual international distress signal, in accordance with the references. **(WSVX.02.06b)**

(3) Without the aid of references, construct an improvised visual signaling device, in accordance with the references. **(WSVX.02.06c)**

(4) Without the aid of reference, utilize a hoist recovery device, in accordance with the references. **(WSVX.02.06d**)

OUTLINE

1. **SIGNALING DEVICES**. The equipment listed below are items that may be on your body or items inside an aircraft. Generally, these items are used as signaling devices during movement. They must be accessible for use at any moments notice.

   a. Pyrotechnics. Pyrotechnics include star clusters and smoke grenades. When using smoke grenades in snow pack, a platform must be built. Without a platform, the smoke grenade will sink into the snow pack and the snow will absorb all smoke.

   b. M-186 Pen Flare. The M-186 Pen Flare is a signaling device carried in the vest of all crew chiefs and pilots. Remember to cock the gun prior to screwing in the flare.

   c. Strobe Light. A strobe light is generally carried in the flight vests of all crew chiefs and pilots. It can be used at night for signaling. Care must be taken because a pilot under goggles can't distinguish a flashing strobe from hostile fire.

d. Flashlight. By using flashlights, a Morse code message can be sent. An SOS distress call consists of sending three dots, three dashes, and three dots. Keep repeating this signal.

e. Whistle. The whistle is used in conjunction with the audio international distress signal. It is used to communicate with forces on the ground.

f. AN/PRC-90 & AN/PRC-112. The AN/ PRC 90 survival radio is a part of the aviator's survival vest. The AN/PRC-112 will eventually replace the AN/PRC-90. Both radio's can transmit either tone (beacon) or voice. Frequency for both are **282.8 for voice**, and **243.0 for beacon**. Both of these frequencies are on the UHF Band.

g. Day/Night Flare. The day/night flare is a good peacetime survival signal. The flare is for night signaling while the smoke is for day. The older version flare is identified by a red cap with three nubbins while the new generation has three rings around the body for identification during darkness. The flare burns for approximately 20 second while the smoke burns for approximately 60 seconds.

NOTE: Once one end is used up, douse in water to cool and save the other end for future use.

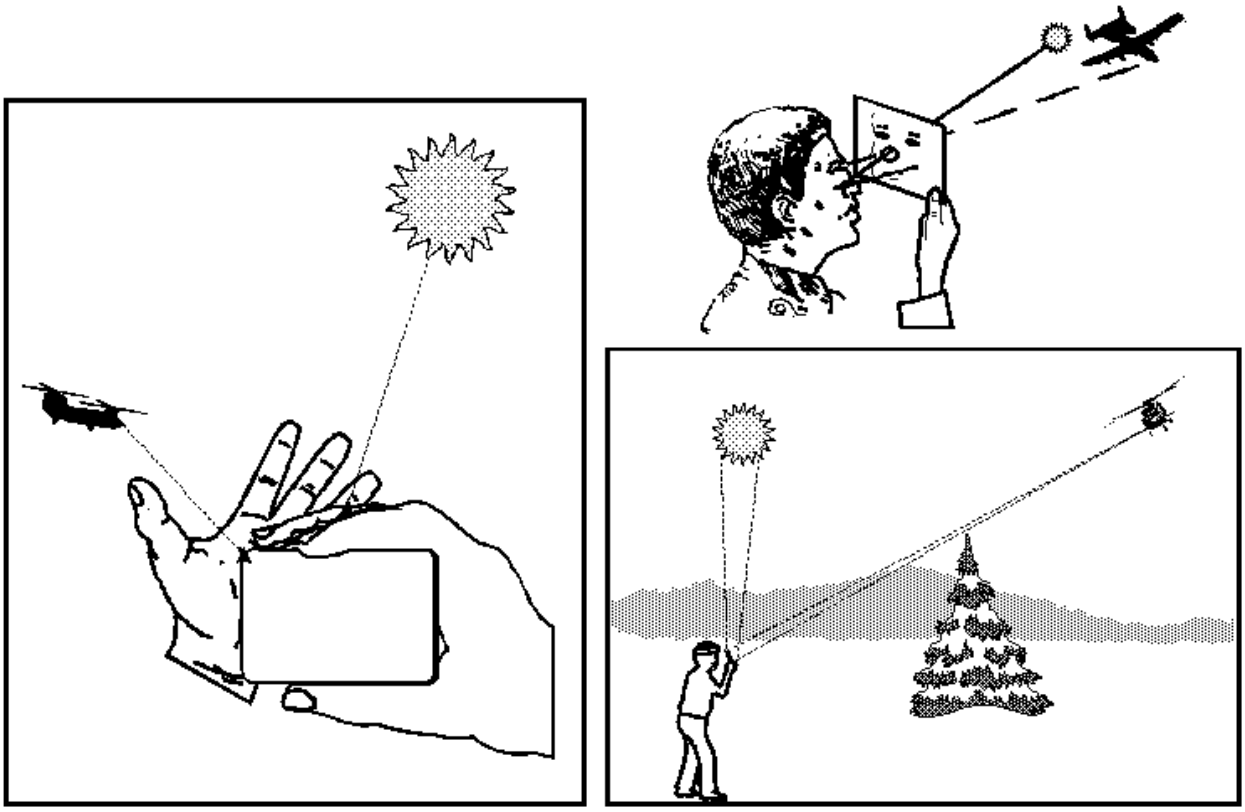
h. Signal Mirror. A mirror or any shiny object can be used as a signaling device. It can be used as many times as needed. It can be concentrated in one area, making it secure from enemy observation. A mirror is the best signaling device for a survivor. However, it is only as effective as its user. Learn how to use one now before you find yourself in a survival situation.

(1) Military signal mirrors have instructions on its back showing how to use it. It should be kept covered to prevent accidental flashing that may be seen by the enemy.

(2) Any shiny metallic object can be substituted for a signal mirror.

(3) Haze, ground fog, or a mirage may make it hard for a pilot to spot signals from a flashing object. So, if possible, get to the highest point in your area when flashing. If you can't determine the aircraft's location, flash your signal in the direction of the aircraft noise.

NOTE: Pilots have reported seeing mirror flashes up to 160 kilometers away under ideal conditions.



AIMING THE SIGNAL MIRROR

2. METHODS OF COMMUNICATION

a. Audio. Signaling by means of sound may be good, but it does have some disadvantages.

(1) It has limited range unless you use a device that will really project the sound.

(2) It may be hard to pinpoint ones location, due to echoes or wind.

(3) International Distress Signal. **(WSVX.02.06a*)*** The survivor will make six blasts in one minute, returned by three blasts in one minute by the rescuer.

b. Visual. Visual signal are generally better than audio signals. They will pin point your location and can been seen at a greater distances under good weather conditions.

(1) The visual international distress symbol is recognized by a series of three evenly spaced improvised signaling devices. **(WSVX.02.06b)**

3. **<u>IMPROVISED SIGNALING DEVICES</u>**. **(WSVX.02.06c)** Improvised signaling devices are generally static in nature. They must be placed in a position to be seen by rescuers. They are made from any resources available, whether natural or man-made.

   a. <u>Smoke Generator</u>. The smoke generator is an excellent improvised visual signaling device. It gives the survivor the flexibility to signal in either day or night conditions. Build them as soon as time and situation permit, and protect them until needed.

      (1) Construct your fire in a natural clearing or along the edge of streams (or make a clearing). Signal fires under dense foliage will not be seen from the air.

      (2) Find two logs, 6 - 10 inches in diameter, and approximately five feet long. Place the two logs parallel to each other with a two foot spacing.

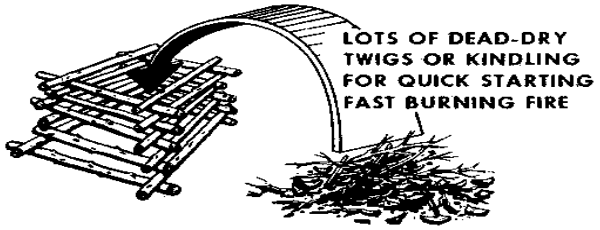
      (3) Gather enough sticks, approximately two inches in diameter and two feet long to lie across the first two logs. This serves as a platform for the fire.

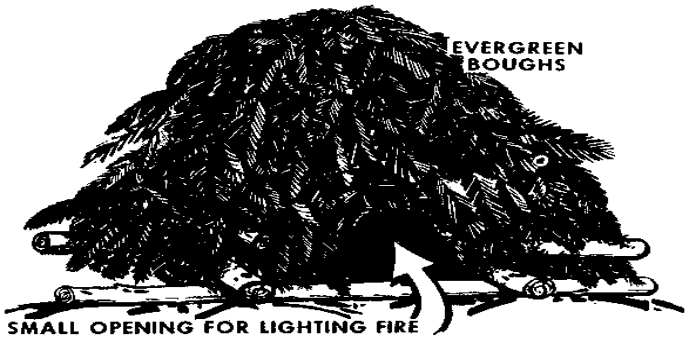
      (4) Gather enough completely dry kindling to fill the entire frame.

      (5) Place your tinder under the platform.

      (6) Gather enough pine bough to lay on top of the pyramid fire. This serves to protect the fire and the tinder.

      (7) To light, remove the pine bough and ignite the tinder. If available, construct a torch to speed up the lighting process, especially for multiple fires.





SMOKE GENERATOR

(8) To create a smoke effect during the day light hours, place the pine bough on the ignited fire.

(9) Placing a smoke grenade or colored flare under the platform will change the color of the smoke generated. The fire to draw in the colored smoke. The colored smoke should contrast with your environment and increase your chances of recovery.

(10)If on loose deep snow pack, a platform of boughs need to be built under the two main logs prior to construction.

b. Arrangement or alteration of natural materials. Such things as twigs or branches can be placed into letters or symbols to contrast with the snow. To attract more attention ground signals should be arranged in big geometric patterns.

(1) International symbols. The following symbols are internationally known:

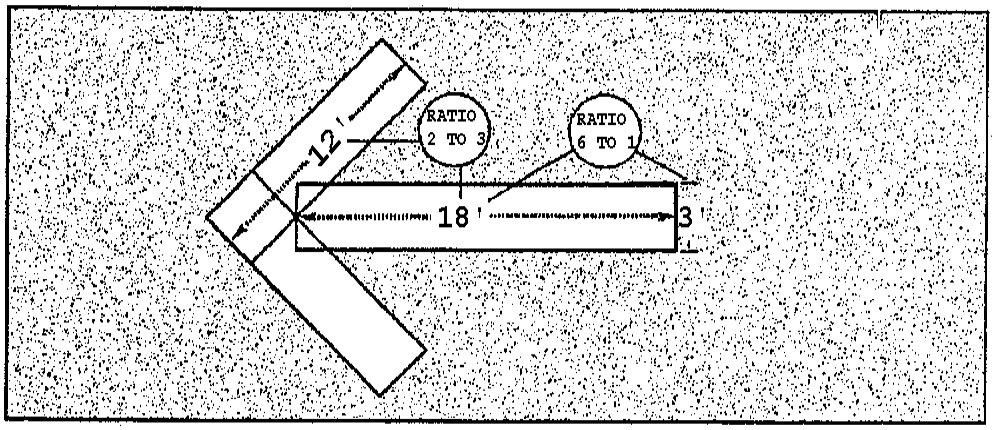
NO.	MESSAGE	CODE SYMBOL
1	REQUIRE ASSISTANCE	V
2	REQUIRE MEDICAL ASSISTANCE	X
3	PROCEEDING IN THIS DIRECTION	↑

INTERNATIONAL SYMBOLS

(2) Shadows. If no other means are available, you may have to construct mounds that will use the sun to cast shadows. These mounds should be constructed in one of the International Distress Patterns. Piled snow or snow blocks may be used to cast shadows. To be effective, these shadow signals must be oriented to the sun to produce the best shadows. In areas close to the equator, a North —South line gives a shadow anytime except noon. Areas further north or south of the equator require the use of East—West line or some point of the compass in between to give the best result.

(3) Size. The letters should be large as possible for a pilot or crew to spot.

(4)



SIZE AND RATIO

(5) Contrast. When constructing letter symbols, contrast the letter from the surrounding vegetation and terrain. Ideally, bring material from another location to build the letter. This could be clothing, air panels, space blanket, etc.

(a) On snow, pile pine bough or use sea dye from a life vest can be utilized.

4. **AIR TO GROUND COMMUNICATIONS**. Air to ground communications can be accomplished by standard aircraft acknowledgments.

a. Aircraft will indicate that ground signals have been seen and understood by:

(1) Rocking from side to side. This can be done during the day or in bright moonlight.

(2) Making green flashes. This is done with a signal lamp during dark nights.

b. Aircraft will indicate that ground signals have been seen but not understood by:

(1) Making a complete circle to the left during the day or in bright moonlight.

(2) Making red flashes. This is done with a signal lamp during dark nights.

5. **RECOVERY**. Marines trapped behind enemy lines in future conflicts may not experience quick recovery. Marines may have to move to a place which will minimize risk to the recovery force. A Marine must take responsibility for the safety of the recovery force.

a. Placement Considerations. In a hostile situation, signaling devices should not be placed near the following areas due to the possibility of compromise:

(1) Obstacles and barriers.

(2) Roads and trails.

(3) Inhabited areas.

(4) Waterways and bridges.

(5) Natural lines of drift.

(6) Man-made structures.

(7) All civilian and military personnel.

b. Tactical Consideration. The following tactical considerations should be adhered to prior to employing a signaling device.

(1) Use the signal in a manner, which will not jeopardize the safety of the recovery force or you.

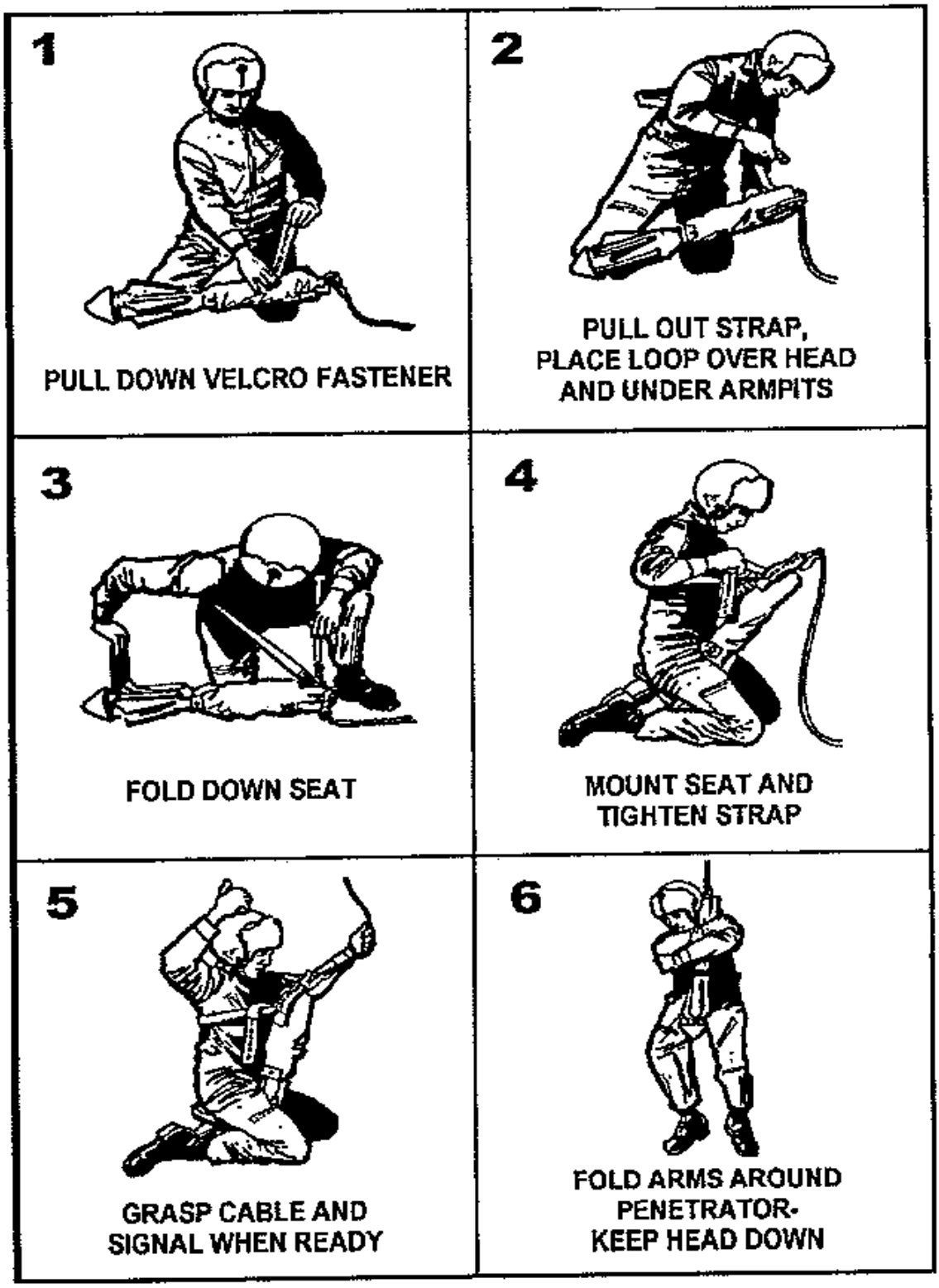
(2) Locate a position with good escape routes and observation of avenues of approach. Position should be located relatively close to extract site in order to minimize time spent on ground by the recovery force.

(3) Maintain continuous security while the signaling device is employed.

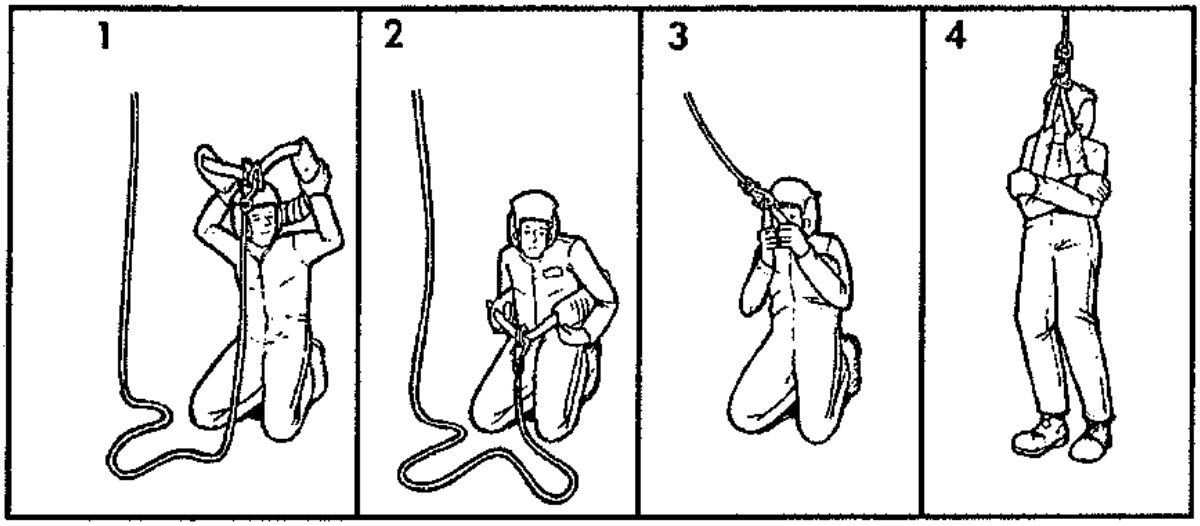
(4) If enemy movement is detected in the area prior to recovery, attempt to recover or conceal the signal.

(5) Employ signaling devices only during the prescribed times as stated in the mission order.

c. Recovery Devices. **(WSVX.02.06d)** In mountainous terrain, a helicopter landing may be impossible due to ground slope, snow pack, or vegetation. The survivor must be familiar with recovery devices that may be aboard the aircraft.


1
PULL DOWN VELCRO FASTENER
2
PULL OUT STRAP,
PLACE LOOP OVER HEAD
AND UNDER ARMPITS
3
FOLD DOWN SEAT
4
MOUNT SEAT AND
TIGHTEN STRAP
5
GRASP CABLE AND
SIGNAL WHEN READY
6
FOLD ARMS AROUND
PENETRATOR-
KEEP HEAD DOWN

JUNGLE PENETRATOR



SLING HOIST

d. Recovery by other than aircraft. Recovery by means other than aircraft may occur. Unit SOP's should include signaling and link-up with forces at the following locations:

(1) Border Crossings. The evader who crosses into a neutral country is subject to detention by that country for the duration of the war.

(2)FLOT.

(a) Static. Recovery along a static FLOT is always difficult. Under these conditions, enemy and friendly forces can be densely arrayed and well camouflaged with good fields of fire. Attempts to penetrate the FLOT should be avoided.

(b) Advancing. Individuals isolated in front of advancing friendly units should immediately take cover and wait for the friendly units to overrun their position.

(c) Retreating. Individuals between opposing forces should immediately take cover and wait for enemy units to pass over their position. After most enemy units have moved on, evaders should try to link up with other isolated friendly elements and return to friendly forces.

(3) Link-up with friendly patrols. Unit authentication numbers and/or locally developed codes may assist the evaders to safely make contact in or around the FLOT and when approached by friendly forces. Identify yourself to

friendly unit while behind cover. Once you have been acknowledged follow any commands as you make your approach.

REFERENCE:

1. FM 21-76, Survival, 1992.
2. Barry Davies BEM, The SAS Escape, Evasion, and Survival Manual, 1996.
3. AF 64-4, Search and Rescue Survival Training, 1985.
4. JP 3-50.3, Joint Doctrine for Evasion and Recovery, 1996.

UNITED STATES MARINE CORPS

Mountain Warfare Training Center
Bridgeport, California 93517-5001

WSVX.02.07
2/6/05

STUDENT HANDOUT

SURVIVAL NAVIGATION

TERMINAL LEARNING OBJECTIVE. In cold weather mountainous environment, navigate in a survival situation, in accordance with the references. **(WSVX.02.07)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, list in writing the considerations for travel, in accordance with the references. **(WSVX.02.07a)**

(2) Without the aid of references, describe in writing the seasonal relationship of the sun and its movement during the equinox and solstice, in accordance with the references. **(WSVX.02.07b)**

(3) Without the aid of references, and given a circular navigational chart and operating latitude, determine the bearing of the sun at sunrise and sunset, in accordance with the references. **(WSVX.02.07c)**

(4) Without the aid of references, construct a pocket navigator, in accordance with the references. **(WSVX.02.07d)**

(5) Without the aid of references, describe in writing the two methods for locating the North Star, in accordance with the references. **(WSVX.02.07e)**

OUTLINE

1. **CONSIDERATIONS FOR STAYING OR TRAVELLING**. **(WSVX.02.07a)**

   a. Stay with the aircraft or vehicle if possible. More than likely somebody knows where it was going. It is also a ready-made shelter.

   b. Leave only when:

      (1) Certain of present location, have known destination, and the ability to get there.

      (2) Water, food, shelter, and/or help can be reached.

      (3) Convinced that rescue is not coming.

c. If the decision is made to travel, the following must also be considered:

(1) Which direction to travel and why.

(2) What plan is to be followed.

(3) What equipment should be taken.

(4) How to mark the trail.

(5) Predicted weather.

d. If the tactical situation permits leave the following information at the departure point:

(1) Departure time.

(2) Destination.

(3) Route of travel/direction.

(4) Personal condition.

(5) Available supplies.

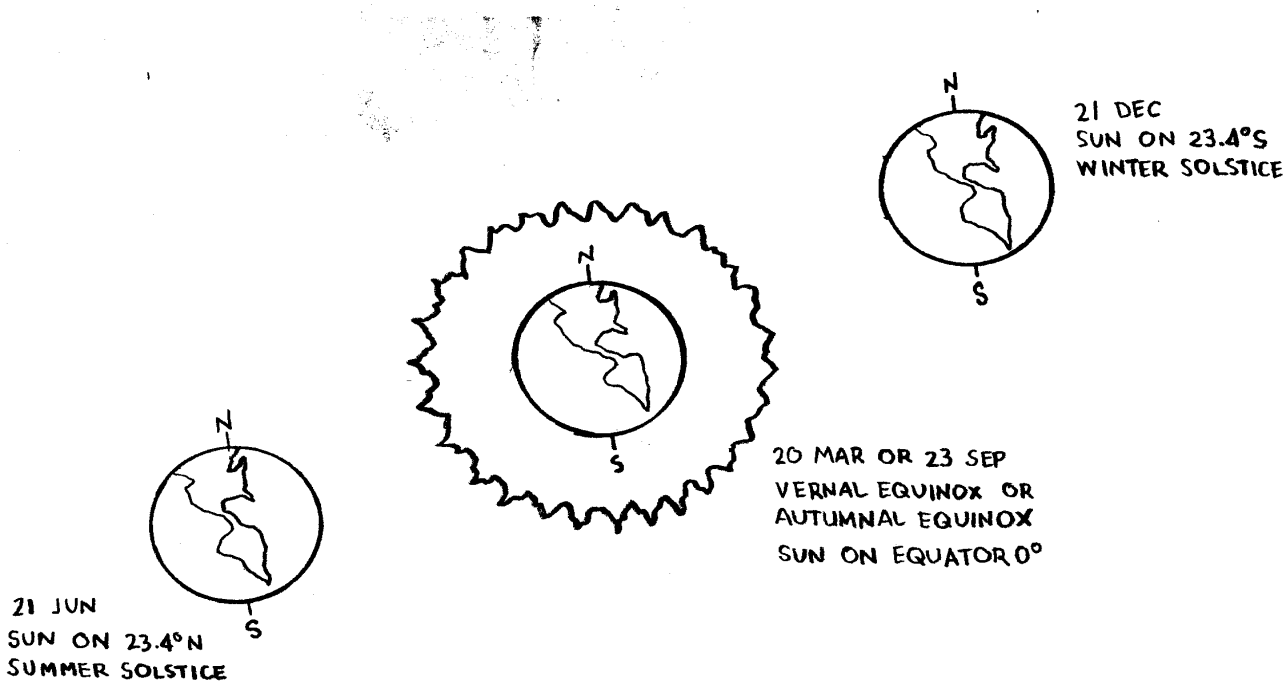
2. **DAYTIME SURVIVAL NAVIGATION**

a. Sun Movement. It is taken for granted the sun rises in the east and sets in the west. This is quite misleading. *In fact, depending on an observer's latitude and the* **season,** *the sun could rise and set up to 50 degrees off of true east and west.*

Position of the Sun at Equinox and Solstice

(1) Summer/Winter Solstice: (21 June/21 December) Two times during the year when the sun has no apparent northward or southward motion.

(2) Vernal/Autumnal Equinox: (20 March/23 September) Two times during the year when the sun crosses the celestial equator and the length of day and night are approximately equal.



moves in a cycle from solstice to equinox; throughout each day, however, the sun appears to travels in a uniform arc across the sky from sunrise to sunset. Exactly half-way along its daily journey, the sun will be directly south of an observer (or north if the observer is in the Southern Hemisphere). This rule may not apply to observers in the tropics (between 23.5 degrees north and south latitude) or in the polar regions (60 degrees latitude). It is at this point that shadows will appear their shortest. The time at which this occurs is referred to as "local apparent noon."

c. Sun's Bearing. **(WSVX.02.07c)** With an understanding of the sun's daily movement, as well as its seasonal paths, a technique is derived that will determine the true bearing of the sun at sunrise and sunset. With the aid of a circular navigational chart, we can accurately navigate based on the sun's true bearing:

(1) Determine the sun's maximum amplitude at your operating latitude using the top portion of the chart. **MWTC operating latitude is 38 degrees.**

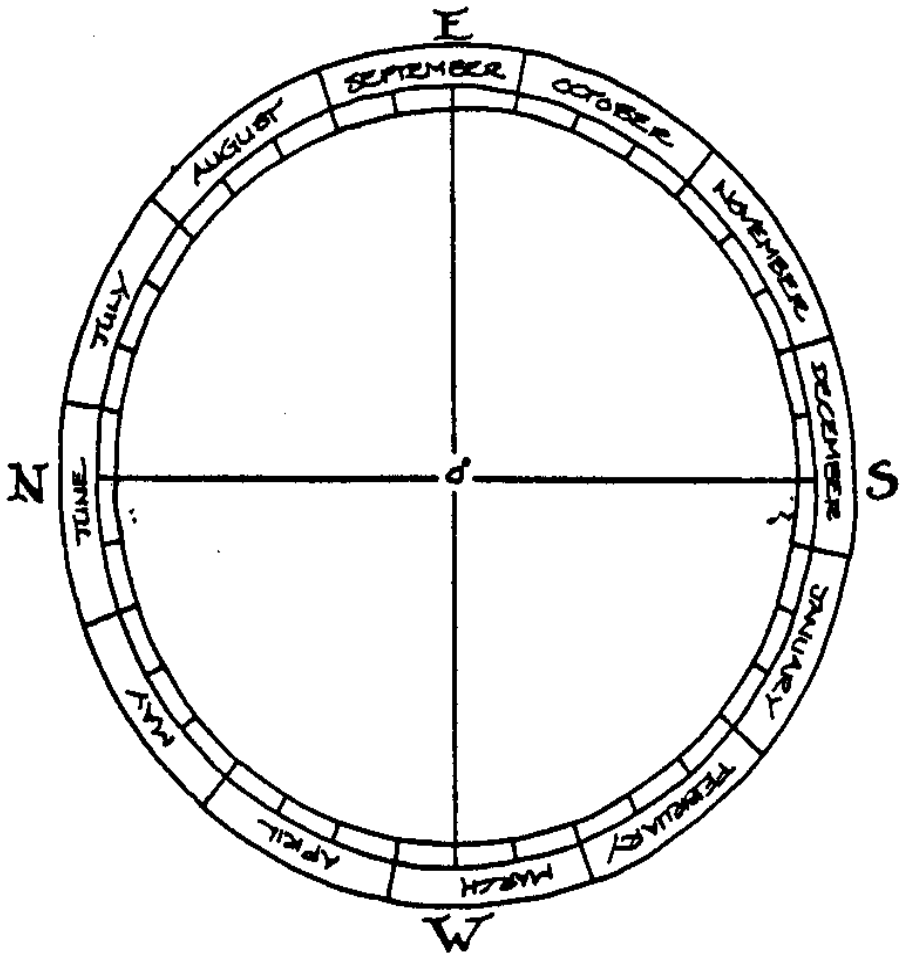
(2) Scale the center baseline of the chart where 0 appears as the middle number; write in the maximum amplitude on the horizontal north / south baseline.

(3) Continue to scale the baseline; you should divide the baseline into 6 to 10 tick marks that represent equal divisions of the maximum amplitude.

(4) From today's date along the circumference, draw a straight line down until it intersects the baseline.

(5) The number this line intersects is today's solar amplitude. If the number is left of 0, it is a "north" amplitude; if the number is right of 0, it is a "south" amplitude. Use the formula at the bottom of the chart to determine the sun's bearing at sunrise or sun set.

LATITUDE (N OR S)	5	10	15	20	25	30	35	40	45	50	55	60
MAXIMUM AMPLITUDE	24°	24°	24°	25°	26°	27°	29°	31°	34°	38°	44°	53°



NORTH AMPLITUDES	SOUTH AMPLITUDES
SUNRISE BEARING = 90° − AMPLITUDE	SUNRISE BEARING = 90° + AMPLITUDE
SUNSET BEARING = 270° + AMPLITUDE	SUNSET BEARING = 270° − AMPLITUDE

Circular Navigational Chart

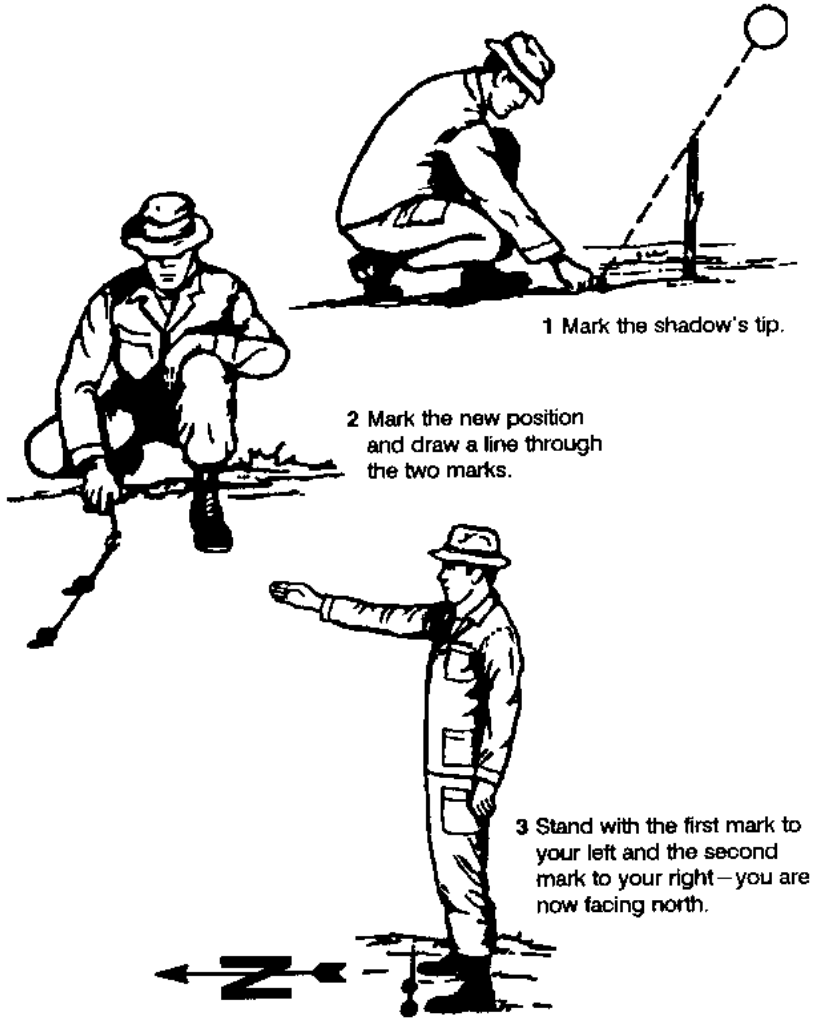
d. Shadow Stick Construction. This technique will achieve a cardinal direction within 10 degrees of accuracy if done within two hours of local apparent noon. Once again, this technique may be impractical near the polar regions as shadows tend to be very long; similarly, in the tropics shadows are generally very small. **Can only be used within 2 hours of local apparent noon.**

(1) Get a straight, 3-6 foot stick free of branches and pointed at the ends and 3-5 small markers: i.e., sticks, rocks, or nails.

(2) Place the stick upright in the ground and mark the shadow tip with a marker.

(3) Wait 10-15 minutes and mark shadow tip again with a marker.

(4) Repeat this until all of the markers are used.


1 Mark the shadow's tip.
2 Mark the new position and draw a line through the two marks.
3 Stand with the first mark to your left and the second mark to your right – you are now facing north.
N

(5) The markers will form a West—East line.

(6) Put your left foot on the first marker and your right foot on the last marker, you will then be facing north.

e. **Local Apparent Noon**. Whenever using any type of shadow casting device to determine direction, "local apparent noon" (or the sun's highest point during the day) must be known. Local apparent noon can be determined by the following methods.

(1) Knowing sunrise and sunset from mission orders, i.e., sunrise 0630 and sunset 1930. Take the total amount of daylight (13 hours), divide by 2 (6 hours 30 minutes), and add to sunrise (0630 plus 6 hours 30 minutes). Based on this example, local apparent noon would be 1300.

(2) Using the string method. The string method is used to find two equidistant marks before and after estimated solar noon. The center point between these two marks represents local apparent noon.

2. **POCKET NAVIGATOR**. **(WSVX.02.07d)** The only material required is a small piece of cardboard or other flat-surface material, a watch, a pen or pencil, and a 1 to 2 inch pin or nail.

a. Set this tiny rod upright on your flat piece of material so that the sun will cause it to cast a shadow. Mark the position where the base of the rod sits so it can be returned to the same spot for later readings. Place the navigator flat on level ground. Secure the navigator from wind by placing rocks on it. Write the date and mark the tip of the shadow.

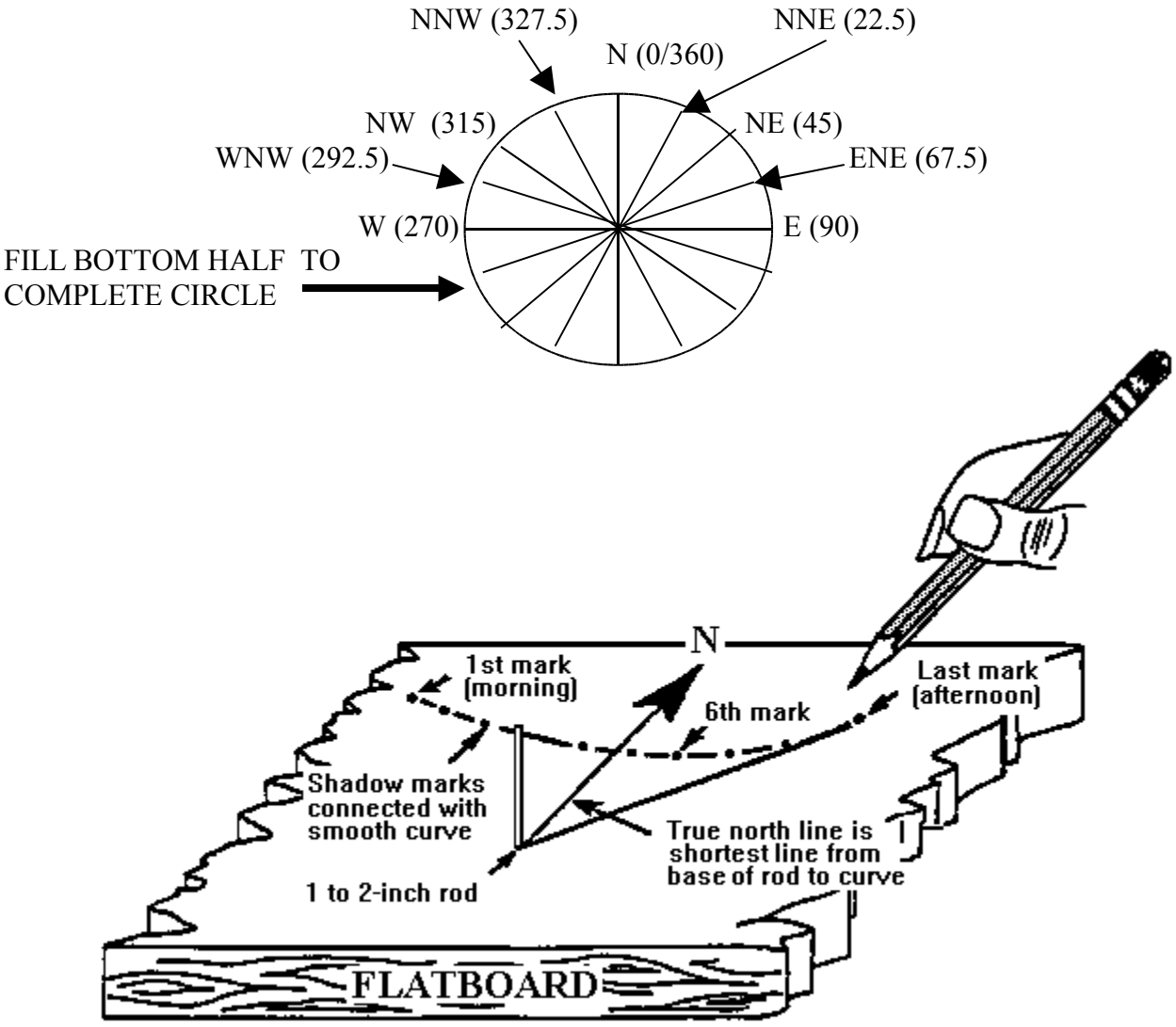
b. As the sun moves the shadow-tip moves. Make repeated shadow-tip markings every 15 minutes. As you make the marks on the tip of the shadow ensure that you write down the time.

c. At the end of the day, connect the shadow-tip markings. The result will normally be a curved line. The arch will be less pronounced closer to the vernal or autumnal equinoxes (March 20 and September 23). If it is not convenient or the tactical situation does not permit to take a full day's shadow-tip readings, your observation can be continued on the following day by orienting the pocket navigator on the ground so that the shadow-tip is aligned with a previously plotted points.

d. The markings made at the sun's highest point during the day, or solar noon, is the north—south line. The direction of north should be indicated with an arrow on the navigator as soon as it is determined. This north-south line is drawn from the base of the rod to the mark made at solar noon. This line is the shortest line that can be drawn from the base of the pin to the shadow-tip curve.

e. To use your pocket navigator, hold it so that with the shadow-tip is aligned with a plotted point at the specified point. i.e.; if it is now 0900 the shadow-tip must be aligned with that point. This will ensure that your pocket navigator is level. The drawn arrow is now oriented to true north, from which you can orient yourself to any desired direction of travel.

f. The pocket navigator will work all day and will not be out of date for approximately one week.



POCKET NAVIGATOR

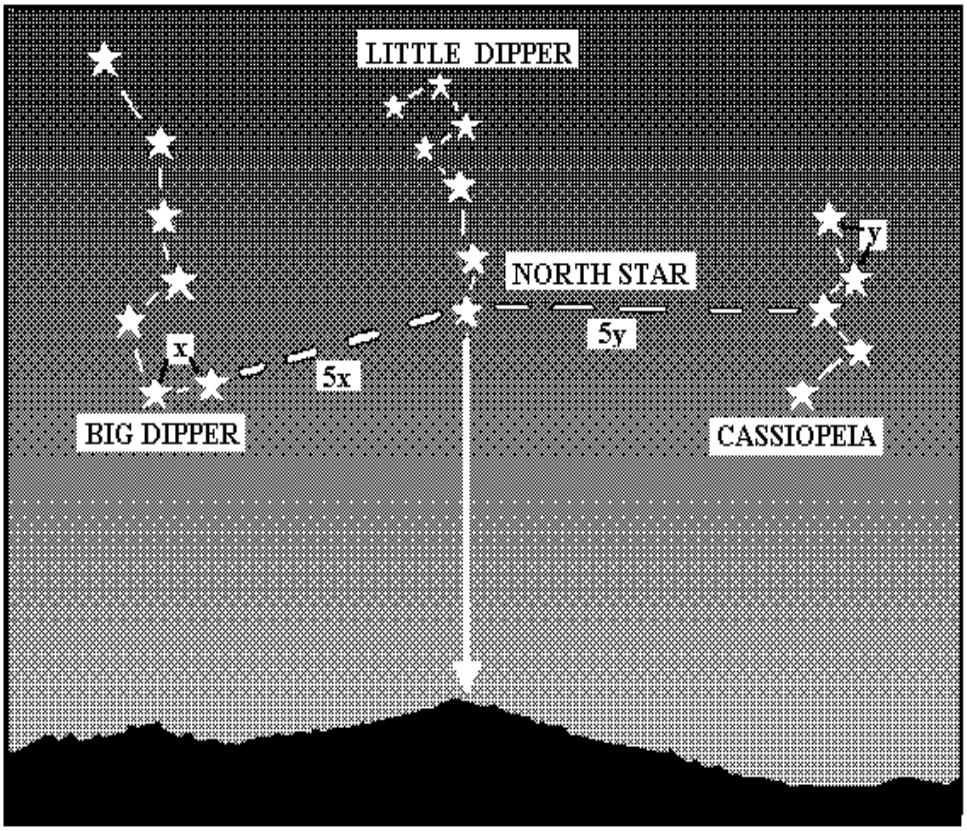
4. **NIGHTTIME SURVIVAL NAVIGATION**

a. Mark North. To aid you in navigating at night, it is beneficial to watch where the sun goes down. If you're going to start moving after dark mark the northerly direction.

b. Locating the North Star. There are two methods used in locating the North Star. **(WSVX.02.07e)**

(1) Using the Big Dipper (*Ursa Major*). The best indictors are the two "dippers ". The North Star is the last star in the handle of the little dipper, which is not the easiest constellation to find. However, the Big Dipper is one of the most prominent constellations in the Northern Hemisphere. The two lowest stars of the Big Dipper's cup act as pointers to the North Star. If you line up these two stars, they make a straight line that runs directly to the North Star. The distance to the North Star along this line is 5 times that between the two pointer stars.

(2) Using Cassiopeia (*Big M or W*). Draw a line straight out from the center star, approximately half the distance to the Big Dipper. The North Star will be located there.

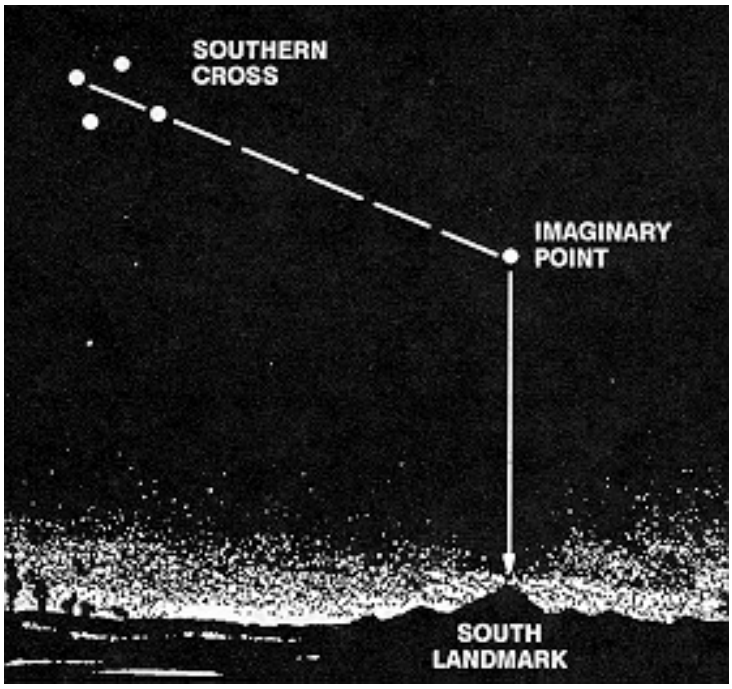


LOCATING THE NORTH STAR

NOTE: Because the Big Dipper and Cassiopeia rotate around the North Star, they will not always appear in the same position in the sky. In the higher latitudes, the North Star is less effective for the purpose of orienting because it appears higher in the sky. At the center of the Arctic circle, it would be directly overhead, and all directions lead South.

c. Southern Cross. In the Southern Hemisphere, Polaris is not visible. The Southern Cross is the most distinctive constellation. An imaginary line through the long axis of the Southern Cross, or True Cross, points towards a dark spot devoid of stars approximately three degrees offset from the South Pole. The True Cross should not be confused with the larger cross nearby known as the False Cross, which is less bright, more widely spaced, and has five stars. The True Cross can be confirmed by the two closely spaced very bright stars that trail behind the crosspiece. These two stars are often easier to pick out than the cross itself. Look for them. Two of the stars in the True Cross are among the brightest stars in the heavens; they are the stars on the southern and eastern arms. The stars on the northern and western arms are not as apparent.

Note: The imaginary point depicted in the picture is the dark spot devoid of stars.



SOUTHERN CROSS

d. Moon Navigator. Like the sun, the moon rises in the east and sets in the west. Use the same method of the shadow stick as you did during the day. However, lunar illumination is not consistent and can be obscured by clouds.

5. **IMPROVISED COMPASSES**. There are three improvised techniques to construct a compass. We will cover them in order of most reliable to least.

a. MAGNET TECHNIQUE. The magnet technique works best. The magnets you are most likely to have available to you are those in a speaker or headphones of a radio. Keep the end of the needle on the battery for a minimum of 2 minutes. But of course you could keep the needle attached to the battery as long as needed.

1. A small piece of iron or steel that is long, thin, and light. Aluminum or yellow metals won't work (only things that rust will do). A pin or needle (the smaller the better) is perfect, but a straightened paper clip, piece of steel baling wire, or barbed wire could also work.

2. Float the metal on still water using a piece of isomat, wood chip, or leaf. Gather some water in a non-magnetic container or a scooped out recess in the ground, such as a puddle. Do not use a "tin can" which is made of steel. (an aluminum can would work.) Place the float on the water, then the metal on it. It will slowly turn to orient itself. Repeat the process several times to confirm your direction.

(a). You could also hang you're needle from a thread. There must be no drafts. This method is not very reliable.

b. MAGNETIZATION THROUGH A BATTERY. A power source of 2 volts or more from a battery can be used with a short length of insulated wire to magnetize metal. Coil the wire around a needle. If the wire is non-insulated, wrap the needle with paper or cardboard. Attach the ends to the battery terminals for 5 minutes. You must tightly coil the wire around the needle for it to work, and the battery must not be weak or you will encounter the same problems as the synthetic technique.

c. SYNTHETIC TECHNIQUE. Does not magnetize the metal strong enough to hold a true reading, especially if there is any wind. Might give one correct reading out of five and it could be off up to 45 degrees.

d. ASSOCIATED PROBLEMS WITH IMPROVISED COMPASSES. The following are common problems with all improvised compasses.

(1) Soft steel tends to lose its magnetism fairly quickly, so you will have to re-magnetize your needle occasionally, though you should not have to do this more than two or three times a day.

(2) Test your compass by disturbing it after it settles. Do this several times. If it returns to the same alignment, you're OK. It will be lined up north and south, **though you will have to determine by other means which end is north. Use the sun, stars, or any other natural signs in the area.**

6. **NATURAL NAVIGATION.**

a. Find out where the prevailing winds originate.

b. Sun's path in Northern Hemisphere is SE-SW

1. Bend in trees because of prevailing winds.

2. Sapling Coloration: whiter on one side, darker green on the other. The sunny side (south side) will cause the tree to turn whitish which is a natural sunscreen. White will be on the SW to SE side of the tree. Pick one that is in the open, exposed to the elements all day.

3. Hottest side of a slope will enhance growth: thicker vegetation the SW side.

.

4. Snow melt on one prominent side of the tree: melt/freeze will indicate the south side.

5. Bleach Rock: the sun's rays has a bleaching effect, lighter side will be to the south. Obviously white rocks are just white rocks.

c. Look for more than one sign to confirm your direction.

7. **SURVIVAL NAVIGATION TECHNIQUES**

a. Navigator.

a

(1) Employ a navigation method.

(2) Find the cardinal direction.

(3) Pick a steering mark in the desired direction of travel.

b. Maintain a Log. The possibility may arise when you will not have a map of the area. A log will decrease the chance of walking in circles.

(1) Construction.

(a) Use any material available to you i.e., paper, clothing, MRE box, etc.

(b) Draw a field sketch annotating North, prominent terrain features and distance / direction traveled.

(c) Write down any important information seen such as; enemy movements or positions, game, vegetation, roads, trails, etc…

(2) Maintenance.

(a) Maintain and update field sketch as movement progresses.

(b) Ensure readability of your field sketch. (i.e.; don't clutter the sketch so much it can't be read.) Keep it simply so anyone would be able to understand it.

c. During Movement Constantly Refer To.

(1) Log.

(2) Steering marks.

d. Actions If You Become Lost.

(1) Immediate action.

(a) Orient your sketch.

(2) Corrective action.

(a) Backtrack using steering marks until you have determined the location of your error.

(b) Re-orient your sketch.

(c) Select direction of travel and continue to march.

REFERENCE:

1. FM 21-76, Survival, 1992.
2. AFM 64-5, Survival, 1969.
3. David Seidmond, The Essential Wilderness Navigator, 1995.
4. Aircrew Survival 1996.
5. Wilderness Way magazine, Natural Navigation Part 1.

UNITED STATES MARINE CORPS

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WSVX.02.08
2/6/05

STUDENT OUTLINE

TRAPS AND SNARES

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, take game, in accordance with the references. **(WSVX.02.08)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, list in writing the eight general considerations to take game, in accordance with the references. **(WSVX.02.08a)**

(2) Without the aid of references, list in writing the general techniques to take game, in accordance with the references. **(WSVX.02.08b)**

(3) Without the aid of references, list in writing the requirements for snaring and trapping, in accordance with the references. **(WSVX.02.08c)**

(4) Without the aid of references, employ a snare, in accordance with the references. **(WSVX.02.08d)**

(5) Without the aid of references, list in writing the types of triggers, in accordance with the references. **(MSVX.02.08e)**

(6) Without the aid of references, employ a trap, in accordance with the references. **(WSVX.02.08f)**

(7) Without the aid of references, employ a noise producing path guard, in accordance with the references. **(WSVX.02.08g)**

OUTLINE

1. **GENERAL CONSIDERATIONS TO TAKE GAME (WSVX.02.08a)**

   A. General Considerations. Knowing a few general hints and tips will make the trapping of animals easier and considerably more effective. The eight general considerations to take game are:

(1) Know your game. Knowing the habits of the animal you want to trap or snare will help increase your chances. Such things as when and where they move, feed, and water will help you determine where the set can be most effectively placed.

(2) Keep things simple. You don't have time in a survival situation to construct elaborate sets and they do not necessarily do a better job.

(3) Place sets in the right place. Animals will travel and stop in certain locations. That is where to build sets.

(4) Cover up your scent. Animals will avoid a set which smells threatening or unusual to them (i.e., human scent or P.O.L.'s from equipment or clothing).

(a) Man leaves a scent through the pores of the skin by the sweat glands. Use an odorless contact glove when building a set. It may take up to three days for your scent to dissipate if made without gloves.

(b) Certain boot soles and clothing may leave a scent, generally this can be detected by the human nose. If noticed, attempt to mask the scent with smoke from your fire.

(5) Use the right type of set. Certain sets work better than others do for a particular animal.

(6) Use the correct equipment. Using the correct equipment is paramount to success. This includes the weight of the lifting device in proportion to the animal's weight, the cordage or wire to hold the animal's strength, and trigger tension.

(7) Check sets. Check your sets twice daily: morning and evening. Checking your traps less than twice a day can allow your game to escape, rot, or be taken by other predators.

(8) Lure your sets. Lures will add to your chances of success. Certain lures are appropriate at certain times of the year, depending upon the animal desired.

(a) Bait Lures.
-MRE peanut butter, cheese spread, or jelly.
-Dead carcasses.
-Dead rodents.

(b) Gland or Territorial Lures.
-Animal Urine mixed with beaver castors or animal glands.

(c) Curiosity Lures.
-Single feather, bird wing, piece of fur tied and suspended under a

tree limb, allowed to freely move with the breeze.

2. **General Techniques to kill animals**. **(WSVX.02.08b)** A general technique is the method in which the trap is intended to kill the animal. The acronym "SICK" is useful in remembering these techniques.

   A. S- Strangle. This method strangles the animal, such as a snare.

   B. Impale. This method pushes a stake through the animal, such as a spiked dead fall.

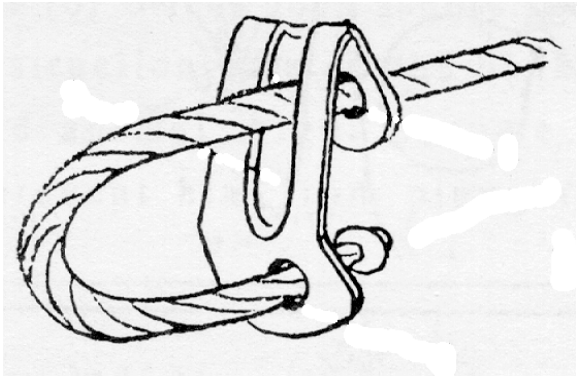
   C. C- Crush. This method crushes the animal, such as a deadfall for a chipmunk.

   D. K- Knock. This method knocks a larger animal unconscious, such as a deadfall.

3. **SNARE NOMENCLATURE AND IMPROVISED SNARES.** A snare in nothing more than a piece of wire, rope, or cord with a loop at one end, which tightens down around animal's neck. Snares are much easier and less time consuming to construct than traps, while producing better results.

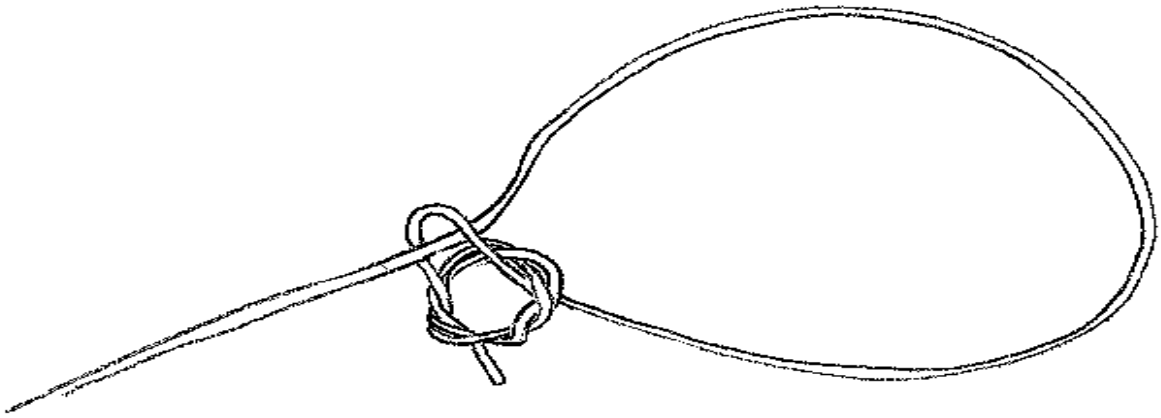
   A. Wire. Although snares can be used with rope or cord, they are less effective than wire. Wire should have memory and resist kinking. Aircraft cable type 7x7, in sizes 1/16 to 3/8 inch should be used. This type of wire prevents animal chew out and resists breakage. Remember that you want the smallest diameter cable capable of holding the animal.

   B. Locking device. A locking device is imperative for a snare to work properly. Locking devices secure the snare around the animal's neck. There are several methods available for a locking device.



COMMERCIAL

BENT WASHER



KNOT

4. **SNARING**. In a winter environment, snaring is the most effective means to take game

   A. Requirements for snaring. **(MSVX.02.08c)** There are three requirements to effectively employ snares. They are location, presentation, and construction.

      1) Location. Location is paramount to success. The following guide can assist you.

         a) Coyotes, Foxes, and Badger. Along rarely traveled roads, fire lanes, irrigation ditches, fence lines, in saddles, along ridge tops, meadow borders, by carcasses.

         b) Bobcat and Lynx. At bases of cliffs and large rock faces; on ridges and saddle crossing; along stream bottoms. Cats need security so rarely get far from tree, brush or escape cover.

         c) Raccoon, Opossum, Skunk, and Ring-tailed Cats. Stream beds and banks; trails along stream beds, ponds, rivers and other water courses; Raccoons like a combination of water, old mature trees, buildings and junk piles, and a consistent food supply like grain or prepared feed.

         d) Weasel. Marshy, grassy meadows.

         e) Marten and Fisher. Along meadow edges, ridgelines, and downfalls.

         f) Mink. Under bridges; around culverts, tiles and junk in or near streams, rivers and lakes, springs and seeps, Muskrat and Beaver lodges and dams. Mink will stop and investigate nearly every hole or cavity around a streambed.

         g) Beaver and Muskrat. Around the food cache under the ice.

         h) Rabbits. In thick willow stands along runs and trails.

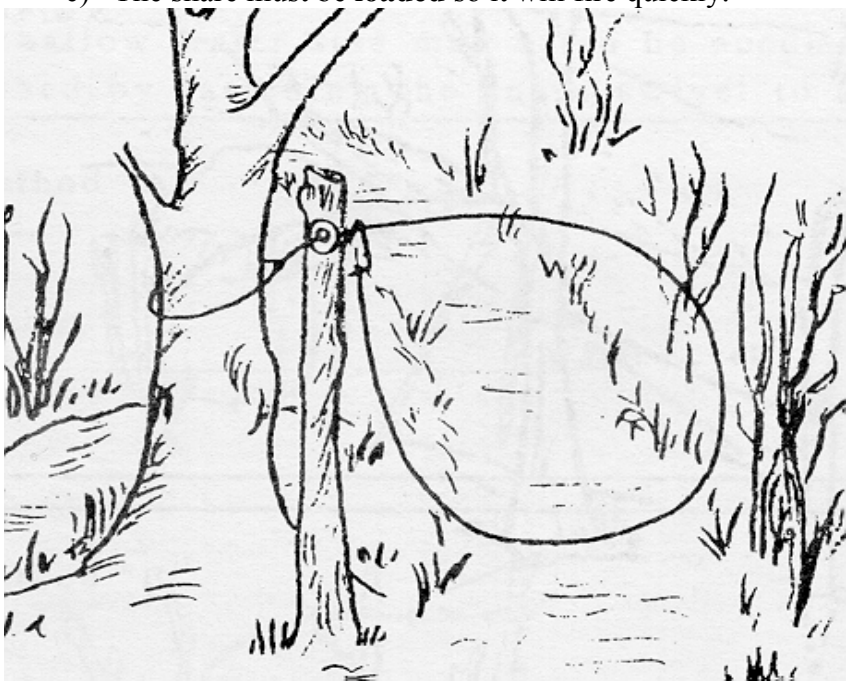
2) Presentation. Presentation is the type of set for the intended animal. Cubbie sets work well for bobcat, raccoon, marten, fisher, opossum, and skunk while trail sets work well for coyote, fox, mink, and rabbit.

3) Construction. Construction is the actual building of the set.

   a) A split stick is utilized to support the snare and ensure the snare fires properly. The split stick can be either green or seasoned wood. However, the snare must not slip through the split. The locking device must be next to the split stick. The split stick must be securely placed in the ground. (If you are utilizing a weighted snare the locking device may be in the 12 o'clock position.)

   b) The snare must be anchored or attached to a drag.

   c) The snare must be **loaded** so it will fire quickly.



   d) Loop size. A correctly employed snare will have the snare holding the animal around the neck. Loop size is placed on the snare according to the intended animal. Too large will result in a body or leg catch, resulting in possible chew out or breakage. Too small will enable the animal to force the snare to the side, resulting in a miss. Additionally, the loop must be placed with specific ground clearance. Ideally, the bottom of the loop should hit the intended animal chest high. The snare trigger is that part of the loop which hits the animals chest.

ANIMAL	NOOSE SIZE	GROUND CLEARANCE
SQUIRREL	2 1/2 TO 3 INCHES	1/2 TO 1 1/2 INCHES
RABBIT	4 TO 5 1/2 INCHES	1 1/2 TO 3 INCHES
RACCOON	6 INCHES	3 TO 4 INCHES
FOX	7 TO 10 INCHES	8 TO 10 INCHES
COYOTES	12 TO 14 INCHES	12 INCHES
BOBCAT	9 INCHES	8 INCHES

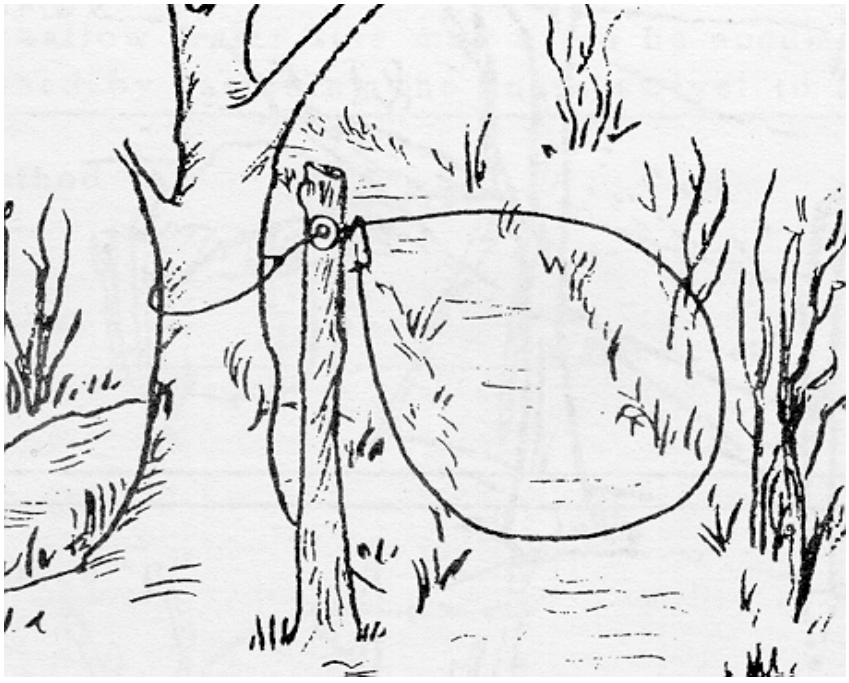
Note: -Noose size is the diameter of the snare loop.
-Ground clearance is measured from the bottom of the loop to the ground.

e) Fencing. The objective of fencing is to have the animal move through the "path of least resistance" or more importantly the snare. Fencing must be subtle and not over done.

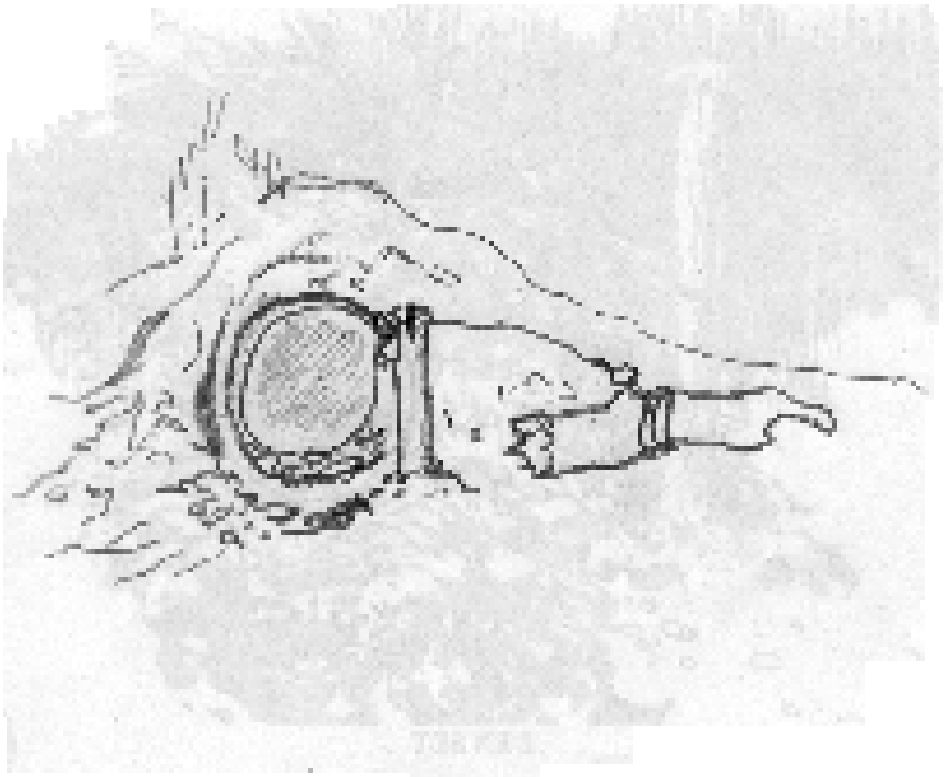
f) Lure. In a survival situation, you will not be able to employ numerous snares. Luring all snares increases your chances of success. However, it is not necessary for trail sets.

5. **<u>SNARE SETS.</u> (MSVX.2.8d)** Although there are numerous ideas to employ snares, here are a few.

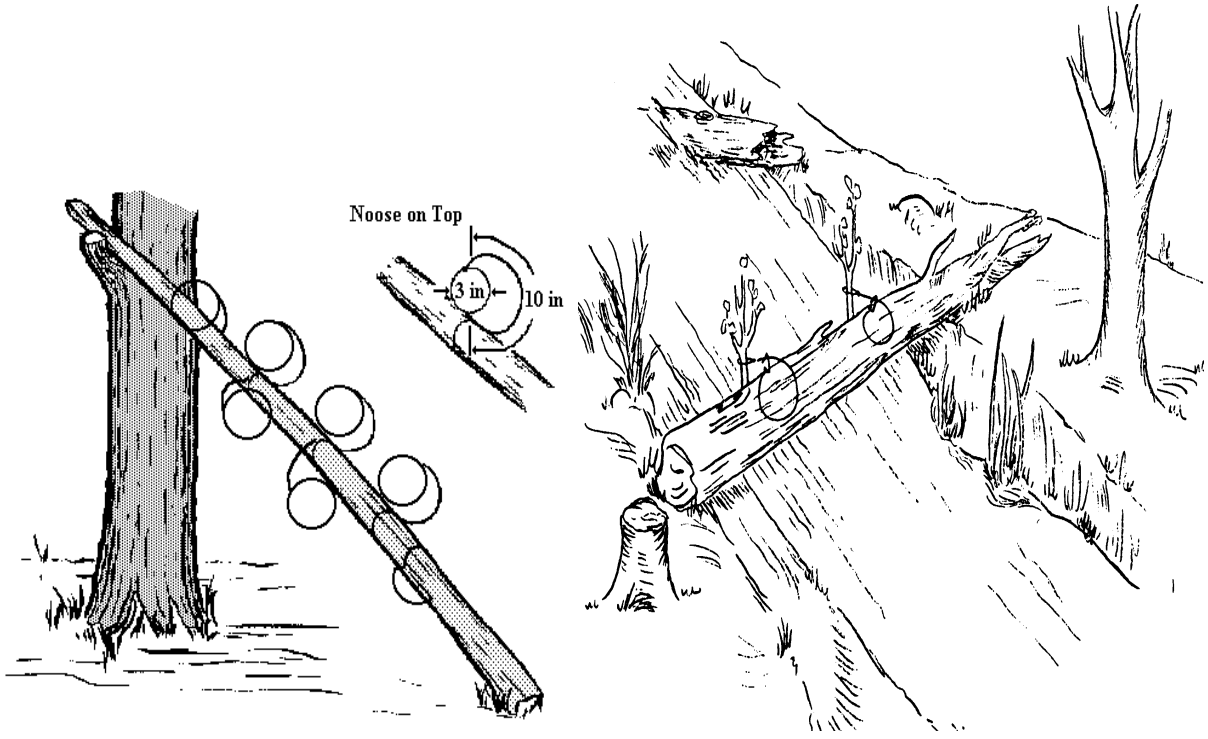
CUBBIE SET



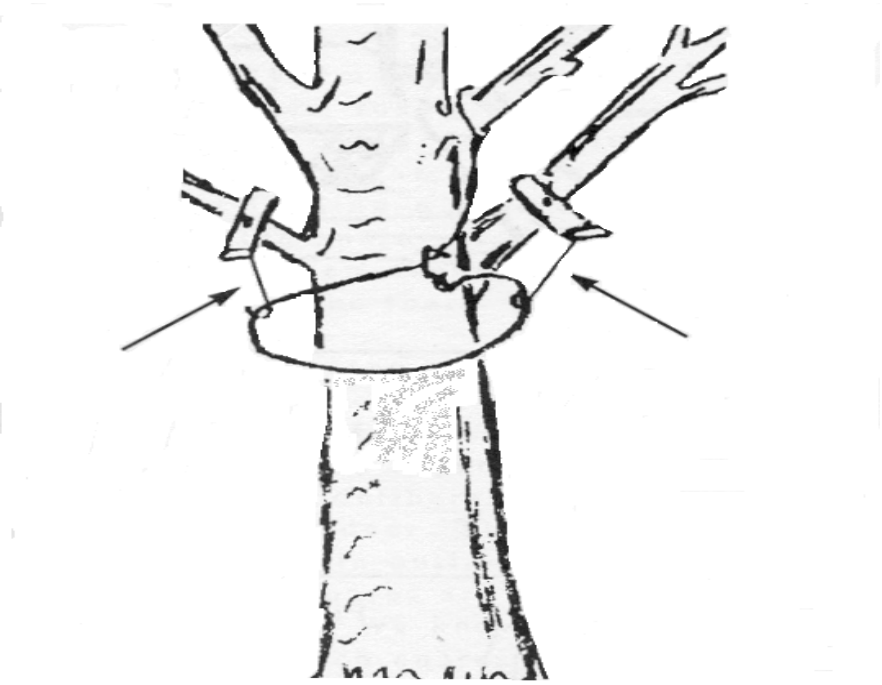
TRAIL SET



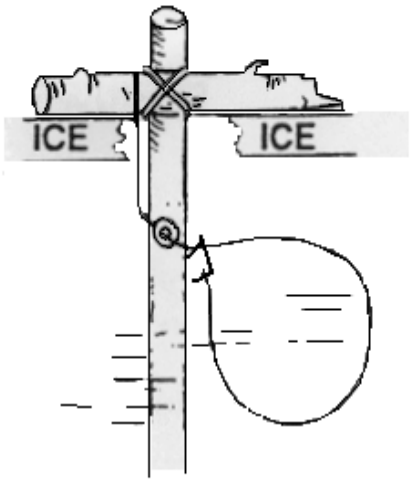
DEN SET



VARIOUS LOG SETS



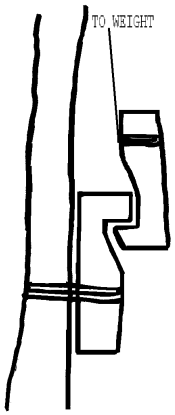
UNDER THE ICE BEAVER SET



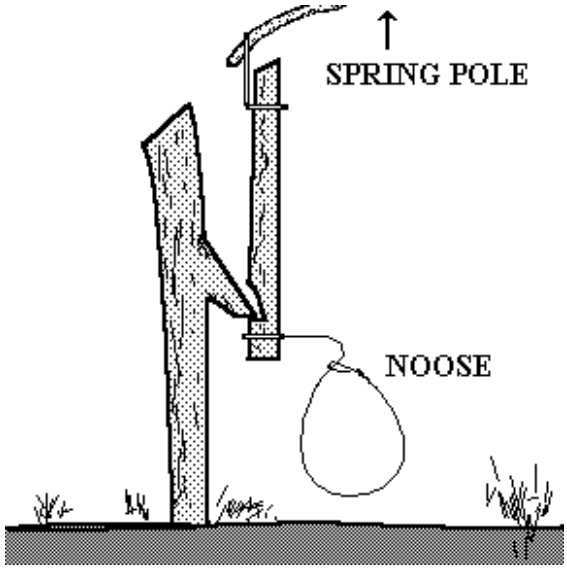
6. **IMPROVISED TRAPS**. Improvised traps are made from a variety of materials. Generally, they incorporate a means to kill the animal (i.e., loop or weight) by the use of a trigger.

   A. Types of Triggers. **(WSVX.02.08e*)*** There are two basic triggers used for all traps and path guards. Depending on the situation, variations of these triggers can be used.

      1) Toggle.

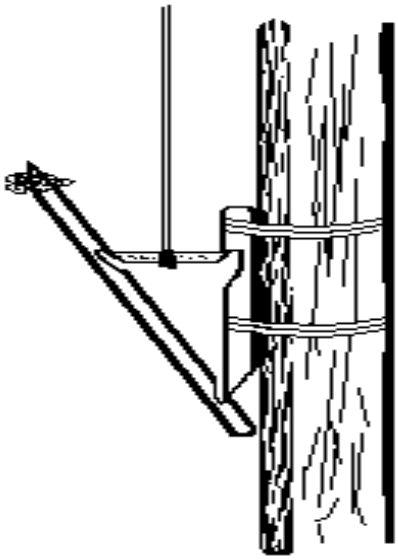


      a. Spring Pole. The spring pole requires a small sapling and cordage to construct. The trigger for the spring pole is the toggle. It is designed to lift the animal off the ground; not allowing predatory animals to take your game. Remember, the trigger can not be so tight that the intended game can not set it off. **The spring pole can freeze in position.**



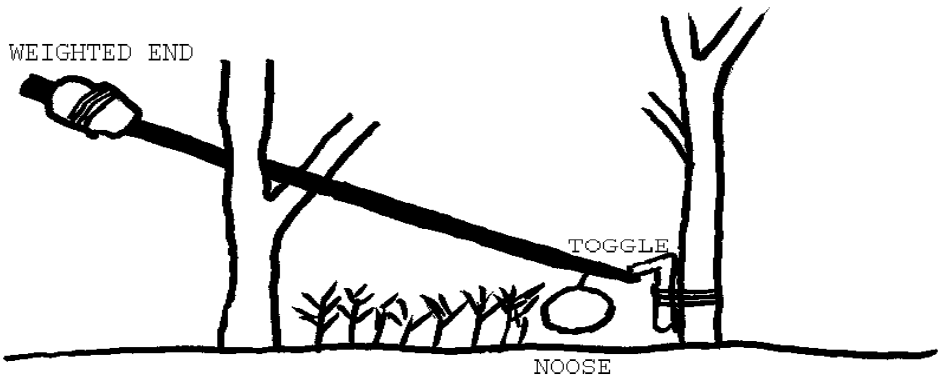
SPRING POLE

2) Inverted Figure 4.

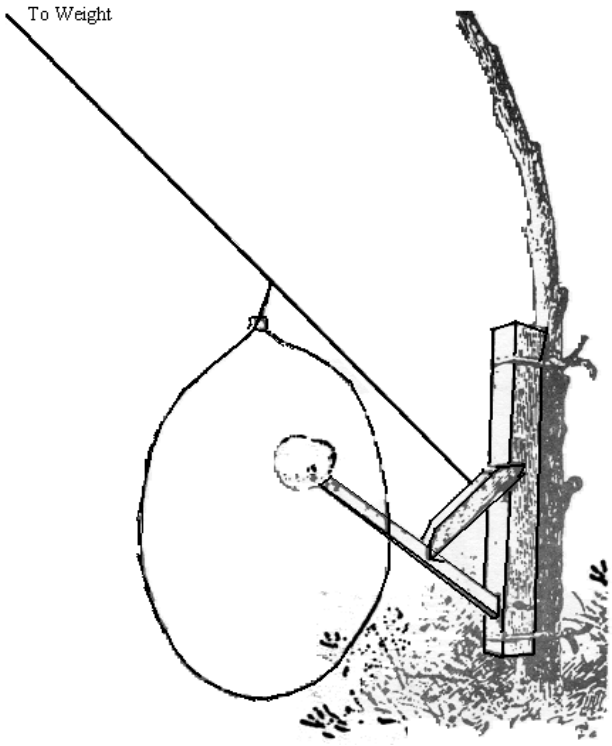


B. Construction of improvised traps. **(WSVX.2.8f)** Traps are designed to hold or kill animals by use of some type of action. This action is generally caused by either a weight or spring loaded device.

1) Weighted Lift Pole. The lift pole requires a small sapling and cordage to construct. The trigger for the "spring" or "lift" pole is a variation of the toggle. It is designed to lift the animal off the ground, preventing predatory animals from taking game. Remember, the trigger can not be so tight that the intended game can not tip it.



WEIGHTED LIFT



WEIGHTED LIFT

2) Baited Treble Hook. Tie a large treble hook onto a tree limb high enough to cause the animal to jump but not so high it cannot reach it. Bait the treble hook.

7. **PATH GUARDS (WSVX.02.08g)** Path guards are designed to protect and provide security for your shelter area against the enemy and predatory animals. They are classified according to noise or casualty producing path guards.

A. Noise producing path guards. Noise producing pathguards serve as an alarm for your shelter area. When triggered, it should produce some type of loud noise. Although construction can vary, depending on materials available, one example is as follows:

1) Secure an inverted figure 4 trigger to a tree.

2) On the weighted end of the trigger, attach several pieces of metal to the cord. Use whatever is available for metal.

3) Attach a trip cord to the trigger stick. Run the trip cord across the trail and anchor on the far side.

4) Place a solid object (i.e., wood, and rocks) underneath the suspended metal. When triggered, the metal should fall on top of the solid object; making an audible noise.

B. Casualty producing path guards. Casualty producing path guards in a winter environment are difficult to construct. When triggered, they should cause death or injury to the enemy or predatory animal. A large-scale deadfall trap can be modified for a casualty producing path guards.

1) Sharpen spikes and secure them on the underside of the deadfall. Spikes can be poisoned.

2) Set up an inverted figure 4 trigger with trip cord as discussed for the noise producing path guard.

3) Set the deadfall to land across the trip cord along the trail.

4) Creativity and ingenuity are the keys to effectively employing pathguards.

REFERENCE:

1. Dr. Major L. Boddicker, Trapping Rocky Mountain Furbearers, 1980.
2. Raymond Thompson, Snares and Snaring, 3rd Edition 1996.
3. Chris Janowski, A Manual that could save your life, 1989.

UNITED STATES MARINE CORPS

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WSVX.02.09
02/06/05

STUDENT HANDOUT

SURVIVAL USES OF GAME

TERMINAL LEARNING OBJECTIVE In a summer mountainous environment, prepare game, in accordance with the references. **(WSVX.02.09)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references and given an animal, dress and skin game, in accordance with the references. **(WSVX.02.09a)**

(2) Without the aid of references and given a green hide, construct a suitable product, in accordance with the references. **(WSVX.02.09b)**

(3) Without the aid of references and given a piece of meat, preserve meat, in accordance with the references. **(WSVX.02.09c)**

(4) Without the aid of references, list in writing the acronym "TOM", in accordance with the references. **(WSVX.02.09d)**

(5) Without the aid of references, list in writing the parts of game that can be used for human consumption, in accordance with the references. **(WSVX.02.09e)**

OUTLINE:

1. **KILLING GAME**.

   A. Bleeding. Slicing the animal's throat or piercing the chest cavity accomplishes this method.

   B. Bludgeoning. Simply beat the animal until it stops moving.

   C. Breaking the Neck. The first step is the same as the nose tap. Laying the club across the neck, pull on the rear legs until a "snap" is heard and release. Once the animal straightens its hind legs, it is dead.

2. **PREPARING GAME (WSVX.02.09a)**

   A. Dressing. Once the animal is dead, dressing should occur immediately. This allows the chest cavity to cool, thus slowing the decay and bacteria rate. Use of chest cavity propping sticks will aid in this process.

1) Game

a) Using a well-sharpened pocket knife, cut around anus. Be careful not to puncture intestines or kidneys.

b) Cut the hide from the anus towards the chest cavity. This is performed by first placing two fingers under the skin. Next, place the blade of the pocket knife in between your fingers. This prevents rupturing the intestines and contaminating the meat.

c) Reach in and pull out the heart, lungs, and liver, keeping them separate from the guts. These organs are edible. Check the liver for white spots. If white spots appear on the liver, the animal may have tularemia.

2) Birds

a) Pluck feathers while body is warm or the bid can be dipped into hot water.

b) A bird can also be skinned. However, this process removes the birds fat layer and is wasteful in a survival situation.

c) Make incision from vent to tail and draw out intestines.

3) Reptiles/Amphibians

(a) Cut off head well down behind poison sacs.

(b) Cut open skin from anus to neck. Pull out internal organs and discard.

Note: Box turtles, brightly colored frogs, frogs with "X" mark on their backs, and toads should be avoided.

B. Skinning. Although, the hide acts as a protective layer it should be removed as soon as possible. This will allow the meat to cool and develop a glaze. Since blood is a food source it should be collected when possible.

(1) Large Game - Caping

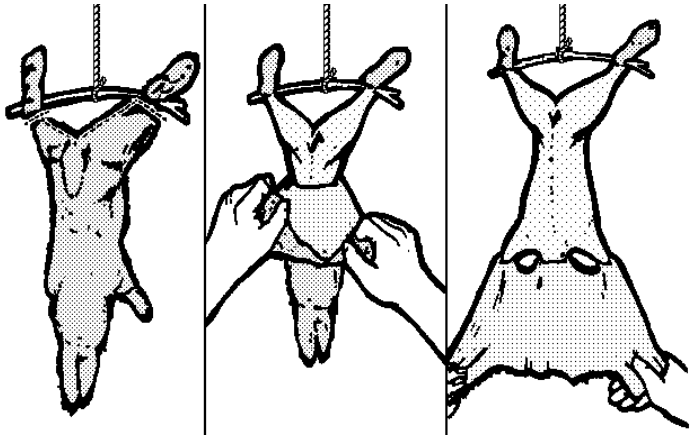
(a) Find the Achilles tendon just above the feet and cut a small hole between the bone and the tendon. Now you can thread a rope, string, etc., through the hole in order to hang the animal upside down from a tree branch or a make shift rack.

(b) Cut completely around the hind legs, just below where the animal is suspended. Then cut towards the anus on the inside of the hind legs.

(c) Pull hide straight down towards the head. The procedure used on the hind legs will be repeated for the fore legs. Continue pulling the hide until it is free of the head. The hide will have to be cut if the animal has antlers.

(2) Small Game - Casing

(a) Small game can be skinned like large game or it can be cased. Casing a hide means to pull the entire skin off the carcass from rear forward, with cuts made only around the feet of the animal and from the back legs to the tail. This method allows the skin to be made into mittens, bags, and other holding devices.



HIDE CASING

(3) Fish

(a) The skin of fish is usually left on.

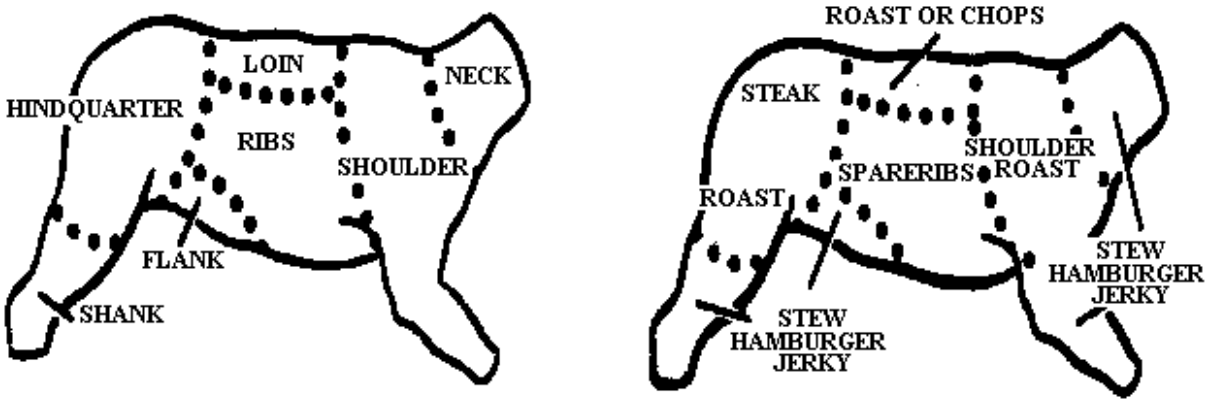
(4) Birds

(a) The skin of birds should be left on. There is a heavy layer of fatty tissue between skin and meat.

(5) Reptiles/Amphibians

(a) The skin of reptiles is left on.

C. Butchering. Is simply cutting the meat into manageable portions. Smaller animals are generally best left whole.



BUTCHERING

Note: *Animals that were killed by the use of poisons should have a 2" cubic size square of meat removed at the point of contamination.*

D. Washing. Meat should be rinsed to remove dirt and especially if any bladder or fecal organs were ruptured during the skinning process.

3. COOKING OF MEATS

A. Cooking meat will kill bacteria and parasites. All game will be cooked until it is thoroughly well done. There are no leftovers in survival. Cook only what you can immediately consume. Ideally, you should eat the heart and liver first to avoid spoiling. There are two methods of cooking.

1) Boiling. This is the best method for cooking. Boiling enables the survivor to consume the animal fat and nutrients, which collect in the broth.

2) **Roasting. This method is wasteful and will not be utilized in a survival situation.**

4. TANNING HIDES (WSVX.02.09b)

A. Fleshing. Fleshing is the actual removal of meat, tissue, and fat from the hide. Fleshing is easier when done as soon as possible, preferably before the hide starts to dry.

1) Soak or wet the hide if dry.

2) Lay the hide on a solid, smooth, round object (i.e., log or canteen).

3) Holding a bayonet, blunt knife, sharp stone or bone tool scrapper at a 10 degree angle away from the body, push the fat and membrane off the leather. Be careful not to make holes in the more tender parts of the belly. For beaver and badger the fat must be cut off the hide.

4) Continue this until all the fat is completely removed.

B. Stretching. A fresh green or soaked hide must be stretched. Either making a frame or using the ground accomplishes stretching.

1) Frame stretching involves lacing the hide to a frame with cordage and pulling it tight.

2) Ground stretching involves staking the hide tight to the ground.

3) A Frame can also be created by bending a stick back on it's self.

4) The less a hide shrinks and hardens the softer it will be at the end of the process.

C. Hair.

1) Using a sharp stone tool scrapper scrape off the hair. Soaking the hide in water will make this process easier.

D. Braining. The brain acts as a lubricant and provides a temporary water repellant.

1) Soak the hide on the stretcher.

2) Extract the brain from the animal.

3) Mix the brains with water to create a pasty solution.

4) Once the brains are warm and thoroughly mixed rub into the hide. Firmly rub the mixture into hide with your hand on only the hairless side.

E. Graining. This step forces the brains thoroughly into the leather.

1) Sponge on water to further dampen hide.

2) Using a blunt end of a pole, apply pressure over every inch, scrapping and stretching the fibers until most of the water is gone from the skin.

3) Tighten the hide on the stretcher and allow it to dry.

F. Rubbing. The next critical step is the high friction rubbing needed to create a little heat and finish the drying, stretching, and breaking of the grain. Either method can be used.

1) Cut the skin from the frame around the perimeter, leaving only the lacing holes and hair that could not be removed.

2) Use a one half-inch rope attached between two trees. Grasp the skin at different points all around its perimeter and pull, pull, pull.

3) If rope is not available, rub the skin by sitting on the ground and hooking the skin over your feet and pulling.

G. Smoking. Smoking the hide will help make the hide water repellant.

1) Add wet or green wood chips to the fire. Sage or willow are good woods. The object is to get the chips to smoke, not burn.

2) It only takes a few minutes to smoke, but be careful to prevent flame from ruining the hide.

H. Animal Hide Uses. Animal hide uses are limited only by the imagination. Listed below are a few ideas:

5. **PRESERVING MEATS (WSVX.02.09c)**

A. Botulism. **(WSVX.02.09d)** Botulism is an often-fatal food poisoning caused by improperly preserved meats. Botulism grows in a controlled environment. The acronym "TOM" is useful in defeating botulism. If any one of the three elements is removed from the preserving process, botulism cannot live.

1) T - Temperature, botulism thrives between 40-140 degrees F.

2) O- Oxygen, botulism needs an airtight environment to live.

3) M- Moisture, botulism needs a moist environment to live.

B. Freezing.

1) Before freezing, cut the meat into pieces of a size that can be used one at a time.

2) Keep it frozen until ready to use. Remember, meat will spoil if thawed and refrozen.

C. Cooling.

1) Place meat in a metal or wooden container with a lid. The container should be ventilated.

2) Set it in water or bury it in damp earth, preferably in a shaded location.

3) Do not throw moldy meat away; cut or scrape off the mold and cook as usual.

D. Jerky. Jerky allows the meat to last a couple of weeks while reducing the weight of meat by dehydrating it. Jerky is made from the meat only.

1) Cut meat into thin strips about 1/4 inch thick. Remove all thick portions of fat.

2) Place meat by a fire to lightly smoke it. You are attempting to develop a thin crust layer on the meat. This serves to deter the bugs and insects. Remember to use hard woods and not conifer type wood. You want to smoke it, not cook the meat.

3) Once the meat has a crust layer, remove the meat and place strips on a hanger for the air to dry it for approximately 24 hours. Once dry, break down fibers by slightly pulling apart the meat and allow it to dry another 24 hours.

4) When it becomes hard and brittle, it is taken down and stored in breathable bags or cloth. It is used in stews, soups, or roasted lightly on coals and eaten.

5) Small animals, fish, and birds are dried whole. After they are skinned, the back is cracked between the legs, a stick is inserted to hold the body cavity open. The animal is lightly smoked and laid out in the sun to dry. When thoroughly dried, they are pounded until the bones are crushed. Another day in the air will dry the marrow and ensure preservation.

E. Pemmican. Pemmican allows meat to last for several months.

1) Dry berries and pound into a paste.

2) Dried jerky is added to the paste.

3) Melted suet (the hard fatty tissues around the kidneys) is mixed with the berries and jerky.

4) Roll the mixture into small balls and place in the cleaned intestines of a large animal or some type of container. This food can be stored for a long time. However, if you believe it is beginning to spoil the meat can be boiled prior to eating.

6. SPECIFIC PARTS

A. Other than the actual meat on game there are other parts of it that can be eaten. They are the: **(WSVX.02.09e*)***

1) Brain.

2) Eyes.

3) Tongue.

4) Liver.

5) Heart.

6) Lungs.

7) Kidneys.

8) Gizzards.

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1. Paul Auerbach, Wilderness Medicine, 3rd Edition, 1995.
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4. Wilderness Way, Volume 2, Issue 1.
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UNITED STATES MARINE CORPS

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WSVX.02.10
2/6/05

STUDENT HANDOUT

SURVIVAL FISHING

TERMINAL LEARNING OBJECTIVE. In a cold weather mountainous environment, take fish, in accordance with the references. **(WSVX.02.10)**

ENABLING LEARNING OBJECTIVES.

(1) Without the aid of references, list in writing where bait can be located during winter months, in accordance with the references. **(WSVX.02.10a)**

(2) Without the aid of references, list in writing the fishing locations, in accordance with the references. **(WSVX.02.10b)**

(3) Without the aid of references, list in writing the ice fishing tools, in accordance with the references. **(MSVX.02.10c)**

(4) Without the aid of references, construct ice-fishing tools, in accordance with the references. **(WSVX.02.10d)**

(5) Without the aid of references, conduct ice fishing, in accordance with the references. **(WSVX.02.10e)**

(6) Without the aid of references, list in writing the set lines, in accordance with the references. **(WSVX.02.10f)**

(7) Without the aid of references, consume a prepared fish, in accordance with the references. **(WSVX.02.10g)**

OUTLINE

1. **FISH**. In a mountainous region, fish are normally an abundant resource. Not only are they a food source, the "left overs" provide an excellent lure for traps and snares.

    a. Winter Fishing Challenges. In cold weather mountainous regions, fishing has some unique challenges.

(1) Decreased water temperatures and lack of oxygen supply in frozen lakes will decrease the activity of fish.

(2) Access to water sources for fishing can be dangerous due to snow depth and ice.

(3) Modified fishing techniques must be applied when winter fishing.

(4) Bait is difficult to find during winter months. The following may aid in procurement of bait. **(WSVX.02.10a)**

(a) Look for galls in plants. A gall is the abnormal swelling of plant tissue caused by insects.

(b) If birds are pecking at trees, insects may be located there.

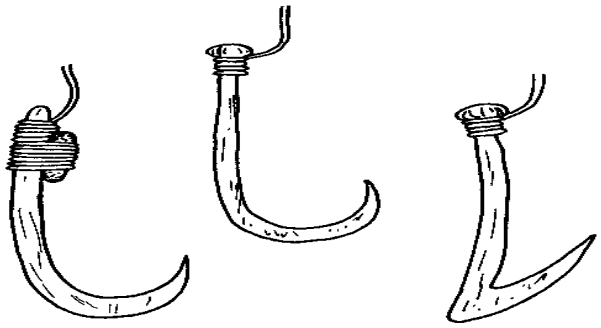
(c) After the first fish is caught, an eye or the first dorsal fin makes exceptional bait.

b. Fishing locations. **(WSVX.02.10b)** Fishing in mountain streams is generally best done with a hand line. When fishing mountainous streams, always look for these places to fish as snow and ice allows.

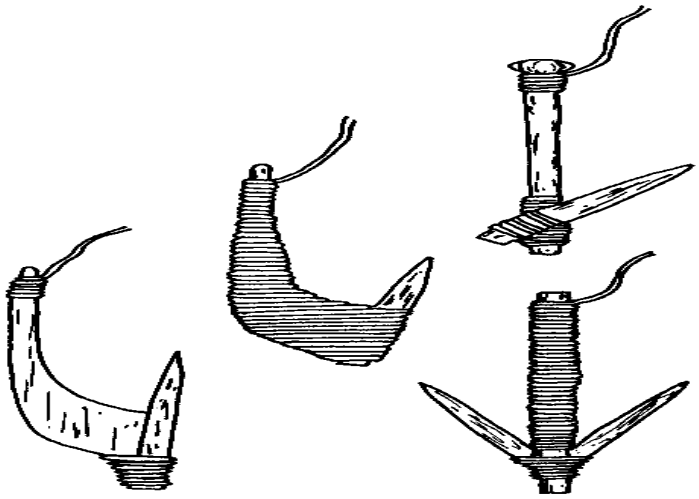
FISHING LOCATIONS

2. **FISHING TOOLS**. Not in every instance may the survivor have everything needed to fish with. At times it may be necessary to build certain equipment.

    a. Expedient hooks. Although hooks should be carried in a survival kit, the survivor should be able to construct additional hooks if the situation requires. One-piece hooks generally work better than two-piece hooks. Expedient hooks are made to become lodged in the throat of the fish. Below are a few examples.



One-piece hooks



Two-piece hooks

b. Ice fishing tools. **(WSVX.02.10c)** Many fish are alive and active under the ice. The ability to chip away ice to gain access is the key.

(1) Ice spud. An ice spud is used to chip a hole into the ice. This should be the only time a fixed blade knife is attached to a pole. Extreme care should be taken in the construction to avoid accidental lose of the knife into the water.

(a) Cut a sturdy pole approximately 4-5 feet in length.

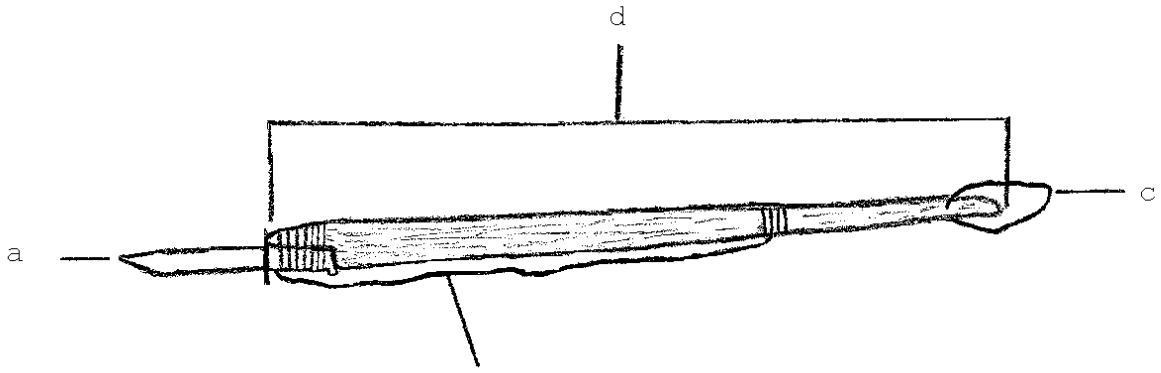
(b) Cut a notch into the heavy end of the pole for the fixed blade knife to fit into.

(c) Fire harden if using green wood.

(d) Lash the fixed blade knife into the notched end of the pole. Dummy cord the knife to the top 1/3 portion of the pole.

(e) Attach a dummy wrist loop into the top 1/3 portion of the pole.

(f) To use, place your wrist into the dummy wrist loop. Begin to chip away at the ice until water is reached. The dummy cord from the knife serves to keep the knife attached to you in case lashing comes off or pole is broken. The dummy wrist loop serves to prevent loss of pole when finally through the ice.



ICE SPUD

(2) Ice skimmer. The ice skimmer is use to keep ice cleared from the fishing hole.

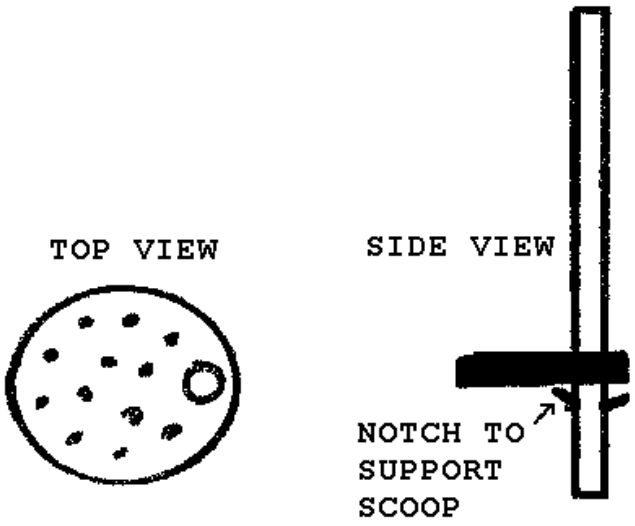
(a) Cut a small sapling approximately 2 feet in length. Shave all notches and smooth out shaft.

(b) Cut a thin flat piece of wood: approximately 1-2 inches thick, 4-5 inches wide, and 4-5 inches long.

(c) Coal burn the flat piece of wood until approximately a 1/2 inch of wood is remaining on the bottom.

(d) Awl out several holes through this coal-burned piece of wood. This will allow water to flow through.

(e) Bore a hole through one end of the wood. Slide the small shaft through the hole.



ICE SKIMMER

3. **<u>ICE FISHING</u>**. **(WSVX.02.10e)** Ice fishing is an excellent method to procure fish from a frozen lake or river. Extreme care must be taken to ensure the stability of the ice prior moving onto the ice.

   a. Use an ice spud to chip a hole in the ice until water is reached. Ensure all components of the spud are securely fastened. The hole should be approximately 12-14 inches in diameter.

   b. Use an ice skimmer to remove floating ice in the hole.

   c. If employing a hand line, use two sticks to reel in line. This prevents hands and mittens from prolonged contact with ice, thus preventing possible frostbite.

PAD TO KEEP KNEES FROM BECOMING WET

WHEN A FISH IS HOOKED IT IS "REELED" IN BY WRAPPING LINE FROM ONE STICK TO ANOTHER.

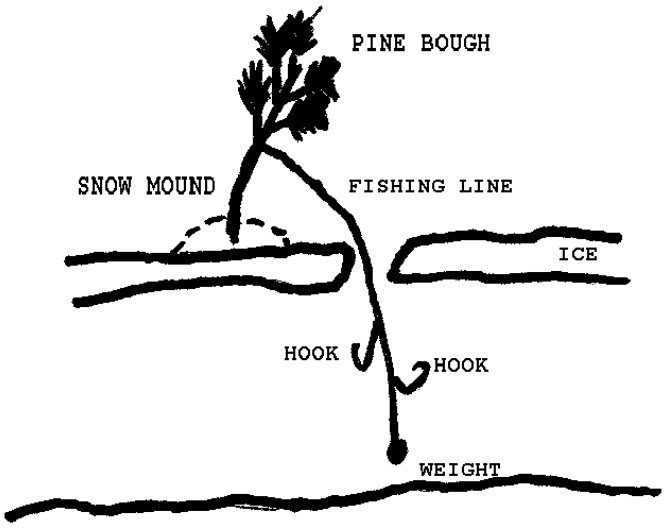
4. **FISHING SET LINES**. **(WSVX.02.10f)** In a survival situation, fishing sets are means to catch fish while working on other tasks or weathering out a storm. Set lines are an effective method of fishing while conserving energy. Put them out over night with several baited hooks attached. Place them with the hooks either on the bottom or suspended off the bottom, until you have determined where the fish are feeding.

    a. Tippet. Multiple holes can be made to increase chances of fish procurement. Place a tippet at each hole. A tippet is made from pine bough and placed in a small loose snow mound.

        (1) Cut a green bough large enough so it cannot be pulled through the hole by a fish.

        (2) All lines should be double hooked.

        (3) Bottom hook should be about 12 inches off the bottom.



TIPPET

b. Frozen river set lines. For snow and ice covered rivers, set lines will have to modified.

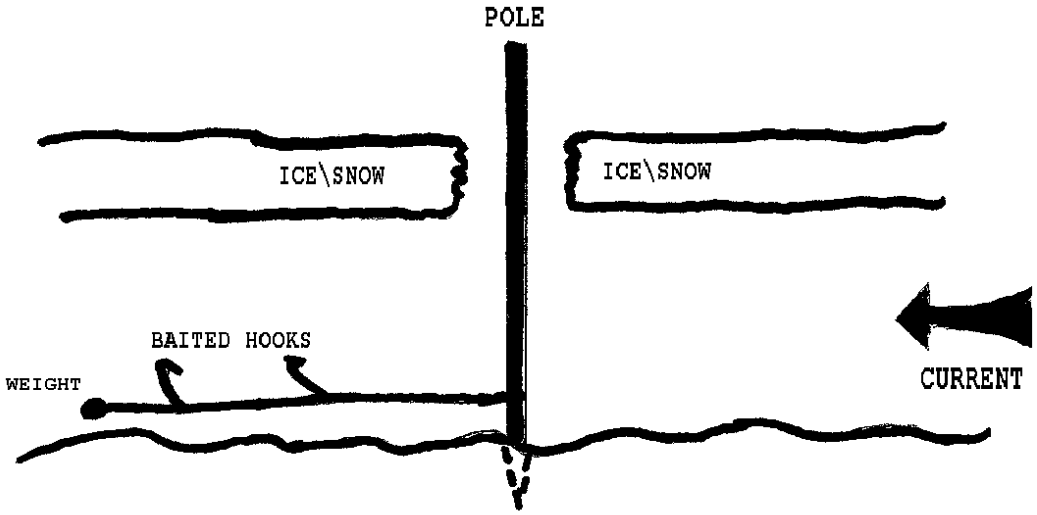
(1) Ensure the stability of the snow/ice covering of the river.

(2) Cut a hole through the snow/ice with the ice spud.

(3) Cut and sharpen one end of a long sturdy pole.

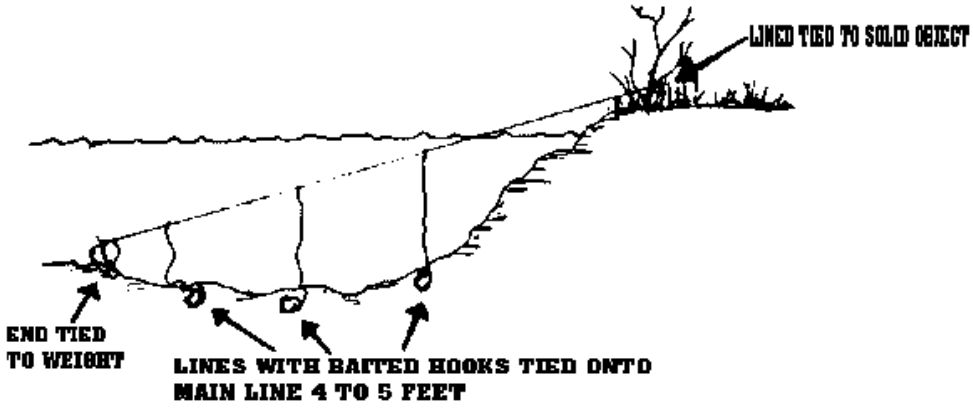
(4) Attach a line with several baited hooks to the pole.

(5) Submerge the line through the hole and force the pointed end of the pole into the riverbed.



FROZEN RIVER SET LINE

c. Standard Set Lines.



STANDARD SET LINE

5. **PREPARING FISH FOR CONSUMPTION**. **(WSVX.02.10g)** Preparing fish to eat is a simple task.

   a. Cleaning Fish.

      (1) With a pocket knife, scrape the scales off the fish, going back and forth from tail to head if the fish has scales.

      (2) With your knife, cut the fish open starting at the anus and work towards the gills.

      (3) With your finger or thumb, push all the guts out and wash thoroughly. Look throughout the intestines to find out what the fish has been eating. You may be able to use undigested food as bait for additional fish.

      (4) The skin and head are usually left on.

   c. Cooking Fish. Fish contain many parasites within the meat. Fortunately they are destroyed by heat.

      (1) Cut the fish in pieces to fit in a canteen cup.

      (2) Boil the fish in water until thoroughly done.

      (3) Roasting can be done, but valuable fat is lost in the fire.

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2. Chris Janowski, A manual that could save your life, 1989.

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WSVX.02.11
02/06/05

STUDENT HANDOUT

FIELD EXPEDIENT TOOLS, WEAPONS, AND EQUIPMENT

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, construct field expedient tools, in accordance with the references. **(WSVX.02.11)**

ENABLING LEARNING OBJECTIVES

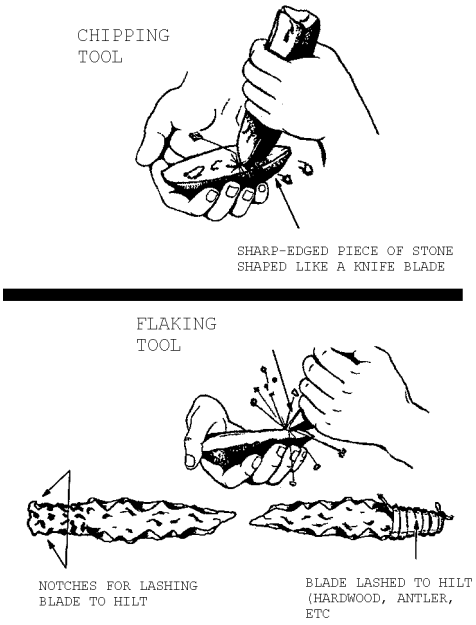
(1) Without the aid of references, list in writing the resources used to construct field expedient tools, in accordance with the references. **(WSVX.02.11a)**

(2) Without the aid of references, list in writing the types of survival sticks, in accordance with the references. **(WSVX.02.11b)**

OUTLINE

1. **RESOURCES (WSVX.02.11a) .** The materials used to make all field expedient tools, weapons, and equipment will fall into one of the five categories.

    a. Stone. Stone will make an excellent striking, puncturing or chopping tool, but will not hold a fine edge. Some stones, such as chert, flint, or obsidian can have very fine edges. Quality stone during winter months is extremely difficult to locate.



(1) Chipping & Flaking. To make a sharp-edge piece of stone, a chipping tool and flaking tool is needed. A chipping tool is a light, blunt-edged tool used to break off small pieces of stone. A flaking tool is a pointed tool used to break off thin, flattened pieces of stone. You can make a chipping tool from wood, bone, or metal and a flaking tool from bone, antler tines, or soft iron.

(2) Weapon heads. Certain stones will shatter under pressure when force is delivered upon it. When selecting a stone, test its hardness prior to use.

b. Bone. Bone has many uses. Hooks, shaft tips, scrapers, awls, sockets and handles are just a few ideas.

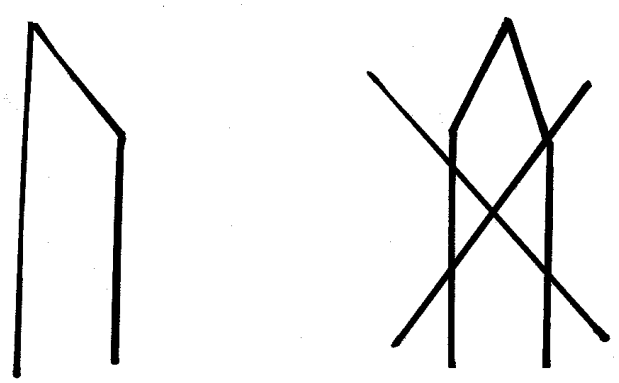
(1) Raw Bone. Raw bone must be shattered with a heavy object, such as a rock.

(2) Shaping & Sharpening. From the pieces of shattered bone, select a suitable pointed splinter. You can further shape and sharpen this splinter by rubbing it in a rough surfaced rock or metal file (i.e., from your multi-purpose knife).

c. Wood. Wood uses are unlimited. A knife blade can fashion the wood into any desired shape.

(1) Types. Wood is classified into two general categories: hard and soft. Hardwood is preferred for all survival uses. To test the wood strength, press your fingernail into the grain of the wood. If a print is visible, the wood is generally soft.

(2) Sharpening. All wood points are sharpened to the side of the shaft. Wood is weakest at the center and will not hold a point.



CORRECT INCORRECT

(3) Fire hardening. All green wood should be fire hardened prior to use. Do this by holding the point of the instrument a few inches above a bed of hot coals while slowly rotating it. Gradually the wood will begin to hiss and steam. Fire hardening makes the cells swell and the sap thicken, which makes the wood more resistant to abrasion and concussion. Avoid charring the wood. Fire harden only the tip until light brown.

(4) Coal burning. It is very difficult to carve depressions in wood. A depression in wood can be made by a process called coal-burning. Using a pair of tongs, place a hot coal over the area you want to hollow out, then blow on the embers with a thin, steady stream of air to keep them glowing. If available, use a thin reed or length of hollow bone to direct the stream of air. After the coals have burned down, scrape out the charred wood with a knife or sharp rock. Repeat this process with fresh sets of coals until the depression is at the desired depth.

d. Metal. Metal is the best material to make field expedient edged weapons. When properly designed, metal can fulfill a knife's three uses: puncture, slice or chop, and cut. First, select a suitable piece of metal, one that most resembles the desired end product. Depending on the size and original shape, you can obtain a point and cutting edge by rubbing the metal on a rough surfaced stone or metal file. If the metal is soft enough, you can hammer out one edge while the metal is cold. Use a suitable flat, hard surface as an anvil and a harder object of stone or metal as a hammer, to hammer out the edge.

e. Other materials. Other materials are those items that can be found or may be on your body which can be used in the construction of field expedient tools.

(1) Load bearing equipment clips. The sliding retaining clip can be removed and sharpened to a point.

(2) Plastic. Plastic, Plexiglas, and glass from an aircraft can be shaped and sharpened into a point. Plastic can also be melted as an adhesive.

(3) Parachute cord. Parachute cord has unlimited uses for construction of field expedient tools.

(4) Pine pitch glue. Pine pitch glue, when properly made, is like an epoxy. Locate and remove pitch from a pine tree. The highest quality pitch to use is fresh sap. The older (dry and hard) sap will work, but not as well. Melt the pitch on an elevated platform, such as a smooth rock. The pitch will run down the platform. Using a 6-8 inch stick, coat the stick in the pool of pitch until it resembles a large wooden match. To use the pitch stick as glue, light the pitch end of the stick, allowing it to drip on the area to be glued. Once sufficiently coated with pitch, sprinkle the activator over the pitch. An activator is finely ground eggshell or fire wood ash.

2. **CLUBS**. Clubs are held and not thrown. As a field expedient weapon, the club does not protect you from enemy soldiers. It can, however, extend your area of defense beyond your fingertips. It also serves to increase the force of a blow without injuring yourself. The only club we are going to discuss is the simple club.

a. Simple club. A simple club is a staff or branch. It must be short enough for you to swing easily, but long and strong enough to damage whatever you hit. Its diameter should fit comfortably in the palm, but not be so thin as to break easily upon impact.

3. **SURVIVAL STICKS**. **(WSVX.02.11b)** There are three types of survival sticks which are useful in a survival situation.

a. Noose stick. A noose stick is useful for strangling and controlling improperly snared animals that are still alive.

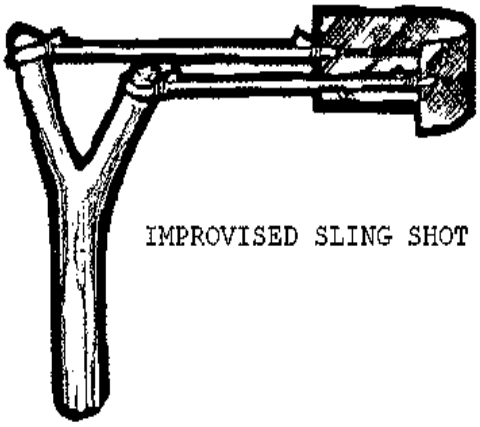
(1) Find a pole as long as you can effectively handle.

(2) Attach a noose of wire or stiff cord at the small end.

(3) To catch an animal, slip the noose over the neck and pull it tight.

NOOSE STICK

b. Sling shot. A Y-shaped stick can easily be made into a sling shot. A sling shot is an extremely effective and accurate weapon.



IMPROVISED SLING SHOT

(1) Locate a hardwood, Y-shaped stick.

(2) From your survival kit, attach the sling shot rubber and pouch.

c. Throwing stick. One of the simplest weapons for survival is the throwing stick. As a tool, the throwing stick can be used to knock dead branches out of a tree that would normally be too high to reach. The dead branches can then be used as firewood.

(1) Find a stick straight as possible, 2.5-3 feet long, and 1.5-2 inches in diameter.

(2) Remove the bark from the stick.

(3) Taper each end of the stick.

(4) Fire harden the entire stick if using green wood.

(5) There are two methods of employing the throwing stick. When in forested area, the best method is to use an overhand throwing motion. In an open area, you can increase the killing radius by using a sidearm throwing motion.

4. **EXPEDIENT PACKS**. The horseshoe pack is simple to make, use, and relatively comfortable to carry over one shoulder.

a. Lay available square-shaped material, such as a poncho or tarp flat on the ground.

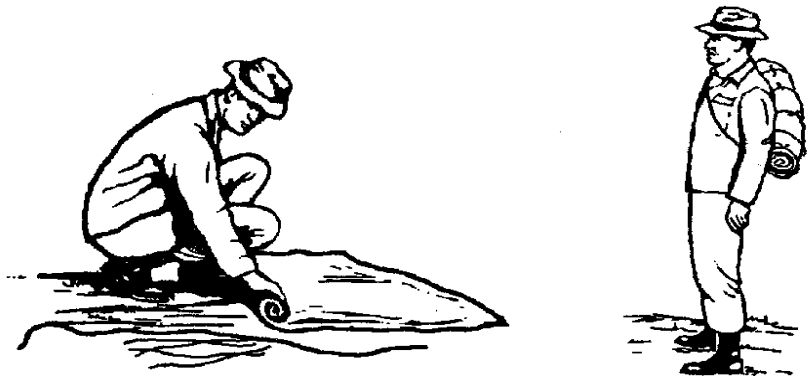
b. Lay items on one edge of the material. Place those items frequently used (i.e., canteens) on the outside. Pad the hard items.

c. Roll the material (with the items) towards the opposite edge and tie both ends securely.

d. Tie extra lines along the length of the bundle.

e. Fold the bundle in half and secure a long piece of rope to the apex of the fold.

f. Attach pack to your body.



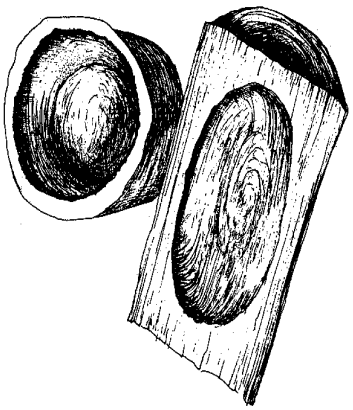
HORSESHOE PACK

5. **UTENSILS**. Utensils are used for cooking, eating, and storing food.

a. Bowl or Container. Bowls and containers can serve to carry and store food. They can be made from bone and wood. To make them out of wood:

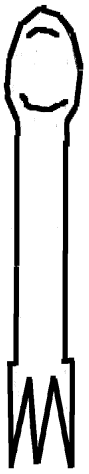
(1) Locate or split a piece of wood.

(2) Coal burn to the desired depth.



COAL-BURNED BOWLS

b. Spork. A spork is a useful tool to eat with. With a knife, carve a piece of wood into the desired shape.



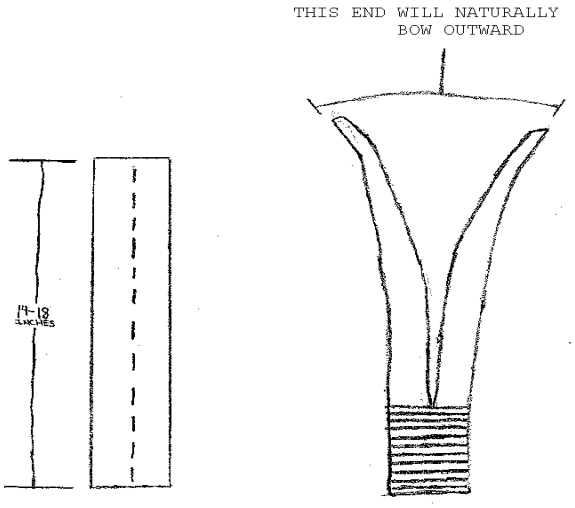
SPORK

c. Tongs. Thongs aid to move hot items, such as coal embers.

(1) Cut a piece of green sapling.

(2) Split the sapling in half and shave off the bark. Flatten both ends of each section.

(3) Fire harden each half.



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UNITED STATES MARINE CORPS

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WSVX .02.12
02/06/05

STUDENT HANDOUT

EXPEDIENT SNOWSHOES

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, execute snowshoe movement, in accordance with the references. **(WSVX.02.12)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, state in writing the purpose of expedient snowshoes, in accordance with the references. **(WSVX.02.12a)**

(2) Without the aid of references, list in writing the characteristics for good expedient snowshoes, in accordance with the references. **(WSVX.02.12b)**

(3) Without the aid of references, construct one expedient snowshoe, in accordance with the references. **(WSVX.02.12c)**

OUTLINE

1. **ADVANTAGES AND DISADVANTAGES OF EXPEDIENT SNOWSHOES**

a. Advantages of Expedient Snowshoes.

(1) Mobility. **(WSVX.02.12a)** The purpose of expedient snowshoes is to give a means of over the snow mobility by providing floatation.

(2) Maintenance. Limited maintenance is required to keep them serviceable.

(3) Heavy Loads. Carrying and pulling heavy loads on gentle terrain is relatively easy.

(4) Confined Areas. Movement in confined areas and around equipment is relatively easy.

b. Disadvantages of Expedient Snowshoes.

(1) Materials. Constructing a pair of expedient snowshoes will consume a lot of material (i.e., it takes approximately 70 feet of 550 cord to build one shoe).

(2) Terrain. Movement over moderate to steep slopes is extremely difficult.

(3) Vegetation. Movement through thickly forested areas or terrain with branches protruding through the snow is difficult.

(4) Natural Material. The green staves used in construction will shrink during the drying process. This shrinkage will require all lashing to be retied.

2. NOMENCLATURE OF EXPEDIENT SNOWSHOES

a. Tip. The front portion of the snowshoe frame.

b. Tail. The rear portion of the snowshoe frame.

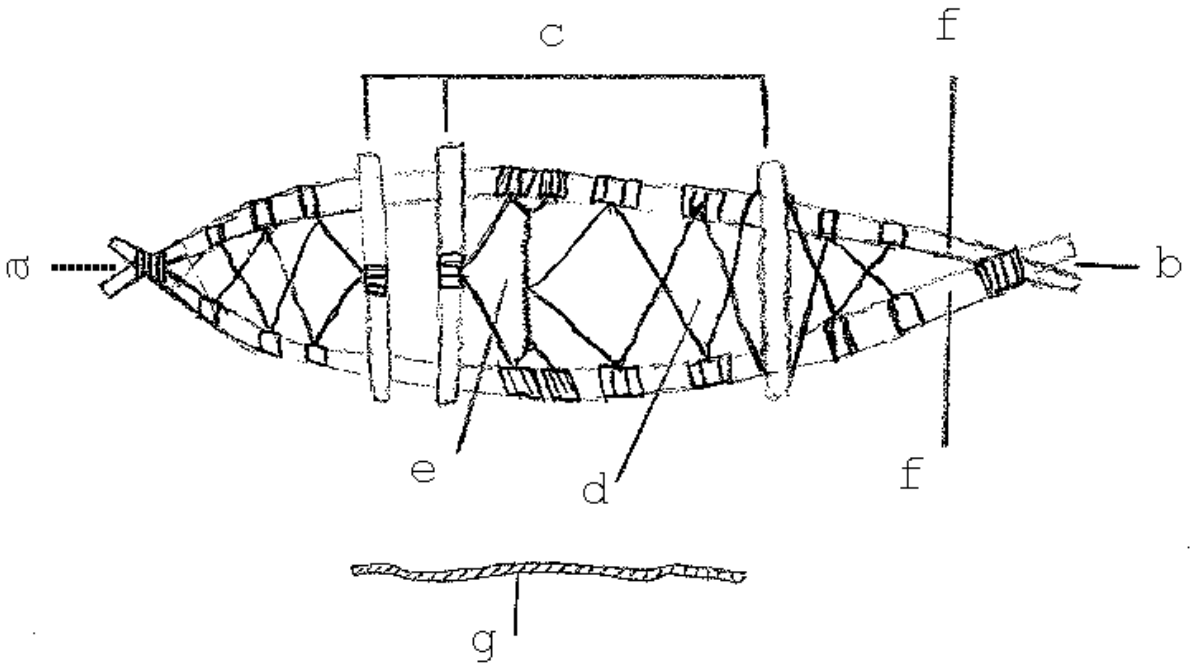
c. Crossbars. Three crossbars are lashed to the frame for reinforcement.

a. Webbing. Webbing is designed to provided floatation of the shoe and release snow when the shoe is lifted. It is generally made from some type of cord (i.e., 550, comm wire).

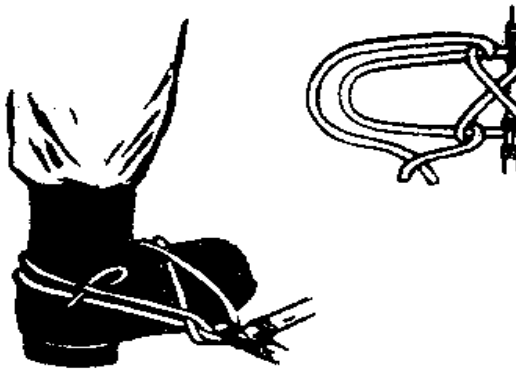
e. Window. This is the opening in the snowshoe, which allows the toe of the boot to pivot. Without the window, the boot will continue to force the tip into the snow during forward movement.

f. Frame. Made from resilient green saplings (i.e., willow, aspen).

g. Binding. The binding is used to attach the boot to the shoe. It is made from an 8 to 10 foot piece of cord.



NOMENCLATURE OF EXPEDIENT SNOWSHOE



BINDING

3. **CHARACTERISTICS OF EXPEDIENT SNOWSHOES. (WSVX.02.12b)**

a. Stability. Stability is the most important characteristic. Snowshoes must be able to undergo great strain and pressure. Careful consideration must be given to the selection of materials used in construction.

(1) Materials used can vary.

(a) Resilient green saplings.

(b) Aluminum aircraft skin and ribbed framing.

(c) Cordage.

(d) Wire.

(e) Cargo strapping.

(f) Initiative and creativity are the key to success.

b. Provide Floatation. Without over-the-snow mobility movement becomes difficult and/or dangerous. Clothing will become wet and "post holing" will consume too much energy, which is vital in a survival situation. Increasing the surface area upon which your body rests will facilitate more efficient movement on the snow.

4. **CONSTRUCTION OF EXPEDIENT SNOWSHOES. (WSVX.02.12c)** These snowshoes will work if staves are thick and sufficient quantity of cordage is available. Use these general construction techniques as a guide.

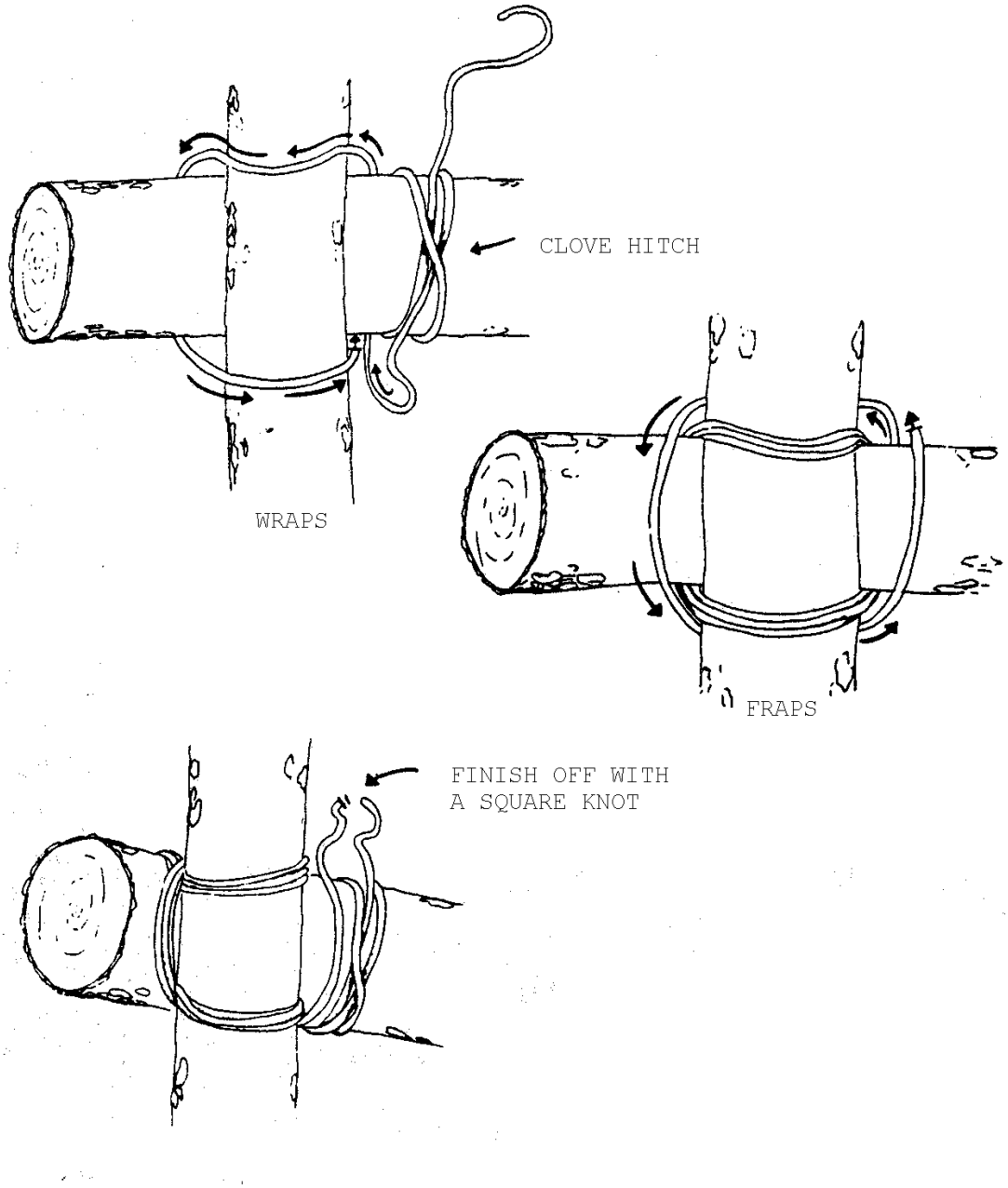
a. Select three straight, resilient, green staves: 5 feet in length and 1 to 1.5 inches in diameter. Cut one of these staves into three sections, measuring 15 inches for each section.

b. Join the two 5 feet staves at the tips and tails using a shear lash. This is the snowshoe frame.

c. Attach the 15 inch sections to the frame: the first section 12-14 inches from the tip, the second section 4-6 inches below the first section, and the last section 15 inches below the second section. All sections are secured to the frame using a square lash. These sections are the crossbars.

d. Affix the latticework to the frame to form the webbing, working from the first crossbar towards the tip. Attach a second latticework from the second crossbar towards the tail.

Note: If cord or wire is limited, space out the latticework. Branches or bough can be interwoven to increase floatation.



SQUARE LASH

e. Attach the boot to the snowshoe using the cord binding system.

Note: All pigtails are secured together by a square knot with two overhand knots.

5. **CANADIAN EMERGENCY SNOWSHOES**. The Canadian emergency showshoes are an excellent method if saplings are available and cordage is limited.

a. Select 5 poles, 6 feet long (individual's height), ¾ inch (thumb size) at the base, ¼ inch (little finger size) at the tip for one shoe.

b. Cut 5 sticks approximately 10 inches long and ¾ inch wide for each shoe and tie them in the following steps.

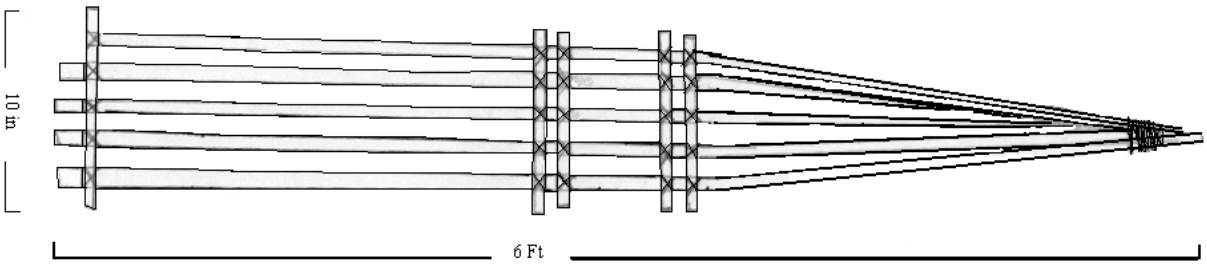
(1) Lash one stick to the snowshoe's tail (across the heavy end of the 5 poles).

(2) Lash 2 sticks across the poles where the heel will rest.

(3) Lash 2 sticks across the poles where the toe will rest.

(4) Secure the tips together.

c. Attach the boot to the snowshoe using the cord binding system..



6. **SNOW SHOE TECHNIQUE**.

a. General. There is little difference in snow shoeing compared to normal walking, except that the surface being walked on is inconsistent, and snowshoes are longer, wider, heavier, and consequently more awkward, than normal footwear. With standard military snowshoes, the stride is somewhat longer than in normal walking, but the shape of the snowshoe allows the snow shoer's stance to be a normal width, thereby reducing much strain and fatigue on his hips and legs. Its should be stressed that the snowshoer should walk in a relaxed, and normal rolling toe manner, and should only lift the snowshoe high enough to clear the surface of the snow.

b. Turning.

(1) The kick turn. This is normally the easiest way to change directions on level ground. One snowshoe is swung up to the front so that its tail is on the snow,

then it is allowed to pivot towards the new direction. The other snowshoe is then brought around.

(a) On steep terrain. It is important to remember to step off with the uphill foot, when changing direction. For example: if making a turn to the right, shift your weight to the left foot, face down the slope, and swing the right snow shoe around to point in the direction of the next switchback. Then stamp the right snowshoe into the snow. Make sure the tail is not on the left snowshoe. Now, gently shift your weight to your right foot and swing the left snowshoe around so it is parallel with your right snowshoe.

(b) Each succeeding man. When using the kick turn technique on steep terrain, try and stay well above your previous trail. This trail has undermined the snow on which you are now building the turn. As each succeeding man uses the turn, it will tend to slough off on the shoulders, and the men toward the end of the column will have a hard time getting around. This can be prevented if care is used by each man in placing his snowshoes precisely where those in front of him have placed theirs. If there is only one way around an obstacle, this can be very important.

(2) The star turn. This can also be used to change direction by simply executing a series of half facing movements.

(3) Choosing a route. When climbing, plan to use the gentlest places on a slope for turns. Look ahead, and pick the route, using the terrain to your advantage. Avoid the steep terrain and don't hesitate to make short switchbacks.

c. Side Step. This is used when the slope is at a critical angle.

d. Herringbone. This is used when the slope is at a gradual angle.

e. Crossing Obstacles. Here are a few simple rules to remember.

(1) Always step over obstacles. Do this to avoid damaging snowshoes and losing balance.

(2) Never bridge a gap. Bridging a gap is when the snowshoe tip and tail are supporting your weight, while the center of the shoe is suspended.

(3) Shallow snow. In shallow snow, there is a danger of catching, and tearing the webbing on tree stumps, or snag, which are only slightly covered.

(4) Wet snow. This will frequently ball up under the feet, interfering with comfortable walking. This snow should be knocked off as soon as possible.

(5) Deep loose snow. Movement in deep loose snow is very exhausting if not on an existing trail. Trail breaking responsibilities should be rotated frequently if in a group.

REFERENCE:

1. AF 64-4, Search and Rescue Survival Training, 1985.

UNITED STATES MARINE CORPS
Mountain Warfare Training Center
Bridgeport, California 93517-5001

WSVX.02.13
2/6/05

STUDENT HANDOUT

WINTER TRACKING

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, conduct tracking, in accordance with the references. **(WSVX.02.13)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, describe in writing the types of gaits, in accordance with the references. **(WSVX.02.13a)**

(2) Without the aid of references, describe in writing the tracks of the major animal families, in accordance with the references. **(WSVX.02.13b)**

(3) Without the aid of references and given an animal hide, identify the animal, in accordance with the references. **(WSVX.02.13c)**

(4) Without the aid of references, list in writing the factors that determines track age, in accordance with the references. **(WSVX.02.13d)**

(5) In a cold weather mountainous environment and given a designated area with tracks, estimate unit size, in accordance with the references. **(WSVX.02.13e)**

OUTLINE

1. **Basic Terminology.** Prior to discussing tracking, some basic terms must be understood:

   a. Trails and Runs. In any area, there will be many thoroughfares or trails and runs. Some may be seasonal, while others may be used by many different species. Runs are infrequently or intermittently used thoroughfares that connect trails to specific feeding, bedding, or watering areas. If trails are like highways connecting cities and towns, runs are like streets providing access to the gas stations, supermarkets, and neighborhoods.

b. Beds and Lays. Beds are frequently used sleeping areas commonly referred to as dens or burrows. These can be found in hollow logs, trees, rock piles, brush piles, grass, thickets, or even out in the open. A lay is an infrequently used resting or sleeping spot. It is rarely used more than once.

c. Rubs. Some rubs are accidental and some are deliberate. Accidental rubs can be in a burrow, on a trail, or over/under a fallen tree across a trail. Deliberate rubs can be when an animal scratches a hard-to-reach spot, or when a deer scrapes its antlers against a tree to remove its velvet.

d. Scratches. They also can be accidental or deliberate. Accidental scratches are left by animals climbing trees or on a log where it left a belly rub. Deliberate scratches can be found at the base of trees where they have reached up and raked their claws downward for any number of reasons. Scratches can also be found in the ground where cats have buried scat, squirrels have cached nuts, or animals are digging at a scent.

e. Transference. Transference is the removal of material from one area onto another. Transference can occur when walking along a muddy stream bank and crossing a log. The mud left on the log is considered transference.

f. Compression. Compression is the actual flattening of the soil or snow pack. It is caused by the pressing down or leveling of soil, sand, stones, twigs, or leaves by the weight of the body. Compression is more likely to be found in frozen, hard, dry, sandy conditions where there is no moisture to hold a clear and lasting imprint.

g. Disturbance. Disturbance is the eye-catching effect of unnatural patterns. This is very common in a snow covered environment, examples are:

   (1) Shoveling snow- while the initial tossed snow is transference, once it melts it will disturb the top layer of the snow pack, leaving an unnatural pattern.

   (2) Forward movement- all forward movement, man or animal, will kick snow forward. The initial tossed snow is transference, but becomes disturbance once the snow has melted.

h. Gait. **(WSVX.02.13a)** A gait is generally the way an animal moves. Gaits are very critical in the identification of animal tracks. Although certain gaits are more indicative of certain animals, they may (depending on the circumstances) modify or alter their gait to another style.

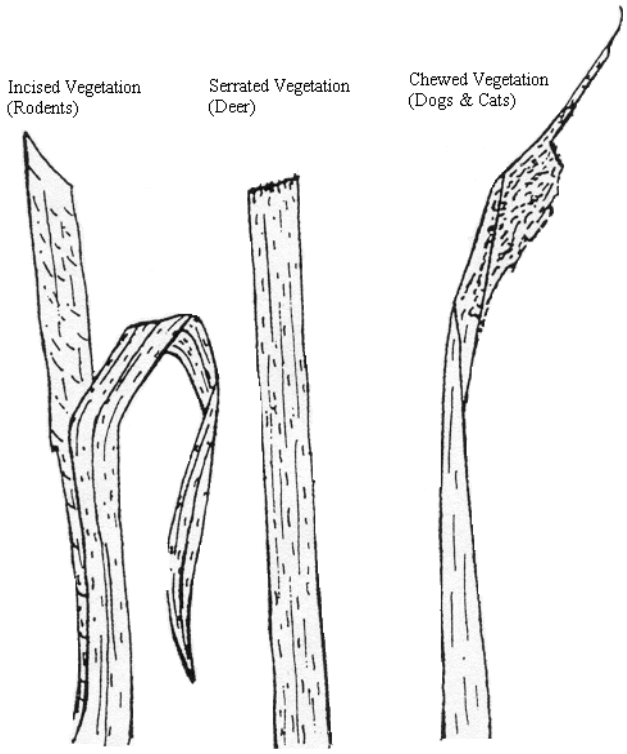
(1) Diagonal Walker. Normal pattern for all predatory animals, which includes all dogs, cats, hoofed animals, and man.

(2) Pacers. Normal pattern for all wide-bodied animals such as bears, raccoon, opossum, skunk, wolverine, badger, beaver, porcupine, muskrat, and marmot. Instead of moving opposite sides of the body at the same time like diagonal walkers, they find it easier to move both limbs on one side of the body at the same time.

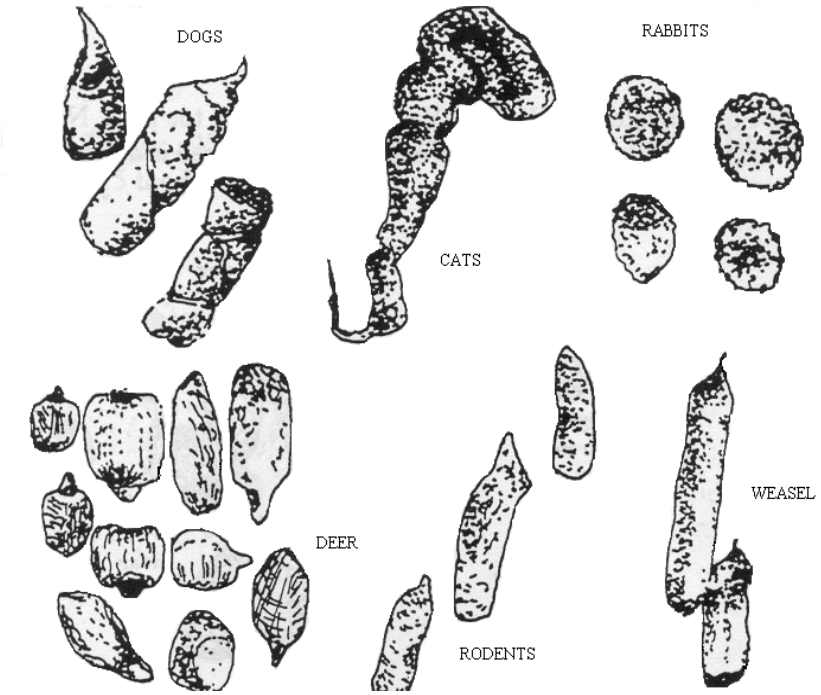
(3) Bounders. Normal pattern for most of the long-bodied, short-legged weasel family such as marten, fisher, and mink. Bounders walk by reaching out with the front feet and bringing the back feet up just behind them

(4) Gallopers. Normal pattern for rabbits, hares, and rodents (except wide-body beaver, muskrat, marmot, and porcupine). As these animals move, they push off with their back feet, hit with their front feet, and bring their back feet into position. Tree dwelling gallopers will land with their front feet side by side, while ground dwelling gallopers will land with the front feet at a diagonal.

i. Gnawing. All animals will chew on vegetation: some as a food source, while predators need certain vitamins. Gnawings can be on trees (cambium layer) or on vegetation.



j. Scat. Scat is actual animal droppings.



k. Sign. Any disturbance of the natural condition which reveals the presence or passage of animals, persons, or things. Examples of sign include stones that have been knocked out of their original position, overturned leaves showing a darker underside, sand deposited on rocks, drag and scuff marks, displaced twigs, and scuff marks on trees.

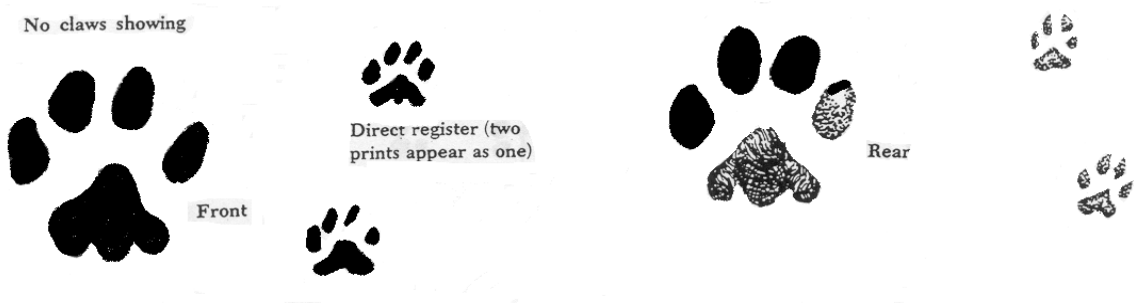
l. Spoor. The actual track or trail of an animal, which can be identified as to size, shape, type and pattern. This word is generally interchanged with track. Spoor is broken down into two segments: aerial and ground.

2. **Reading Spoor**. Unless a clearly visible ground spoor is readable, interpretations must be made in order to determine "what animal made this?" Prior to ever attempting to read spoor, one must be thoroughly knowledgeable about what animals are in the area.

a. The first step is to look at the gait. This will generally narrow down the species.

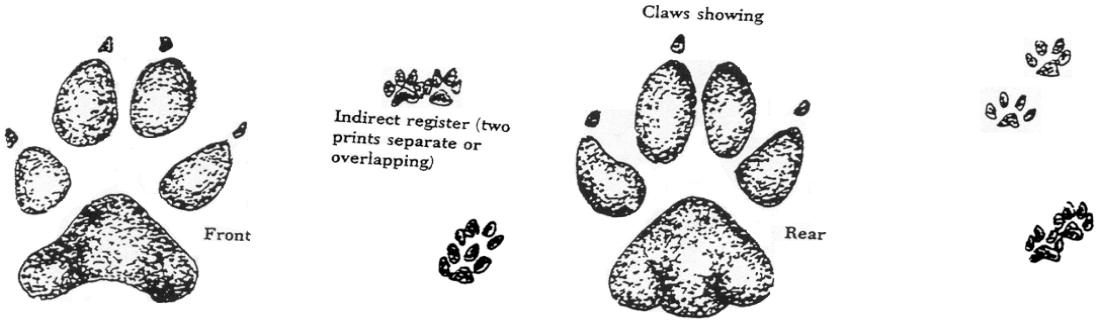
b. The next step is determined which animal family the track belongs to. **(WSVX.02.13b)**

(1) Cat Family. Bobcat, Lynx, and Mountain Lion (Cougar). 4 toe pads, no visible claw print. It moves with a sense of purpose and direct registers its paws. Its heel pad is much more defined than one from a dog.



CAT FAMILY

(2) Dog Family. Fox, Coyote, and Wolves. Visible claw print, 4 toe pads. No sense of purpose, except fox, which steps like a cat and likes depressions. Heel pad is much rounder.

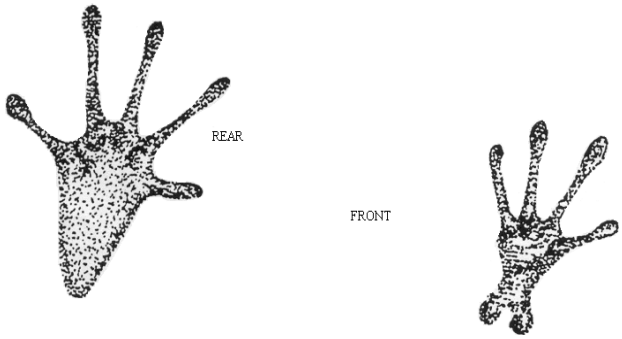


DOG FAMILY

(3) Rabbit Family. The main difference between rabbits and hares (which include the jackrabbit) is that rabbits are born almost hairless and with eyes closed, while hares are born with a thick coat of fur, open eyes, and an ability to run very soon afterwards. They have four toes with relatively enormous hind feet as compared to their front.

RABBIT FAMILY

(4) Rodent Family. Voles, Mice, Rats, Chipmunks, Squirrels, Woodchucks, Muskrats, & Beaver. Track size varies greatly because of the different species, but one fact remains, all have 5 toe prints on their rear feet, while having 4 toe prints on their front feet.



RODENT FAMILY

(5) Weasel Family. Weasel, Mink, Marten, Fisher, Skunks, Otter, Badger, Porcupine, & Wolverine. All have 5 toe prints.

WEASEL FAMILY

(5) Raccoon, Opossums, & Bear. All have 5 toe prints while looking like a baby's hand print.

RACCOON, OPOSSUM, & BEAR

c. After the family is known, using various clues will help identify the species. **(WSVX.02.13c)**

(1) If the tracker is educated on the behavior and habits of animals, he can determine the individual species. This information can be used for better employment of traps and snares. The following is an example.

(a) Walking along a creek bank, you notice a set of tracks that have five toe prints for both front and back feet with visible claw prints. This information tells you the prints belong to the weasel family. The tracks have a bounding gait pattern, which eliminates wide-bodied animals such as badger, skunk, porcupine, and wolverine. Because the tracks are approximately the size of a dime, you have eliminated marten and fisher. The tracks are following the stream bank for some distance, stopping at small holes along the bank's edge. Knowing that weasels like grassy meadows, you can determine that the track is probably made by a mink.

3. **Age Determination**. **(WSVX.02.13d)** It is very critical to be able to determine track age. Each area and climate will vary in the effects of aging tracks, so practice, experimentation, and experience is vital in that area. The following factors deteriorate all tracks and must be factored.

a. Weather - Last snow or rain, fog, and dew.

b. Sun.

c. Wind.

d. Soil content - hard, sandy, firm, or moist.

e. Track Erosion. All tracks will erode over a given period of time. The key to snow track erosion is the amount of sunlight and temperature the track has been exposed to. The following timetable can be used as a *general* guideline.

(1) Minutes to an hour Transference is noticed around the outer edges on top of the snow pack.
Track edges are sharp and clean

(2) 1-3 hours
Transferred snow has melted, leaving small pock marks on top of the snow.
Track edges are slightly rounded

(3) 4-24 hours
Pock marks on top of snow pack have disappeared.
Track edges are rounded, inside track walls are firm.

(4) 24-72
Top layer of snow pack is angling down towards track.
Track is beginning to fill in and will have a "S" curve.

f. Aging Scat. All scat dries on the inside first. Therefore, relatively wet scat on the outside could be old. The only way to determine the age is by analyzing the inside. When assessing scat, care must be taken to avoid the possibility of contracting disease.

4. **Size Estimation**. **(WSVX.02.13e)** Although there is no exact method to determine actual unit size, an approximation can be made.

a. Up to a Squad. It is possible to count basket marks, if on skis. The track is generally clean and straight. It is possible to identify multiple ski and/or snow shoe tracks.

b. Squad to Platoon Size. If on skis, basket marks are difficult to distinguish from each other and may look like a small ditch. The track is somewhat clean and straight, but maybe a half-a-width wider than normal (i.e., 3 ski tracks or 3 snow shoes tracks wide).

c. Platoon to Company Size. The track is sloppy and wide, possibly 2-3 times wider than normal. The edges of the track are destroyed at bends and curves.

5. **Tracking**.

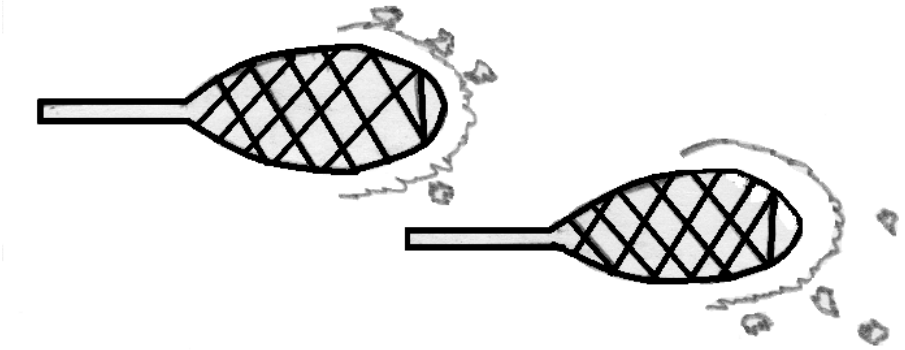
a. The best time to track is early in the morning or late in the afternoon due to the height of the sun to cast shadows. When reading spoor, always place it between yourself and the sun.

b. Do not move past the last sign until you have found the next sign, this is called "sign cutting" and will be discussed later. In training, always try to find every track.

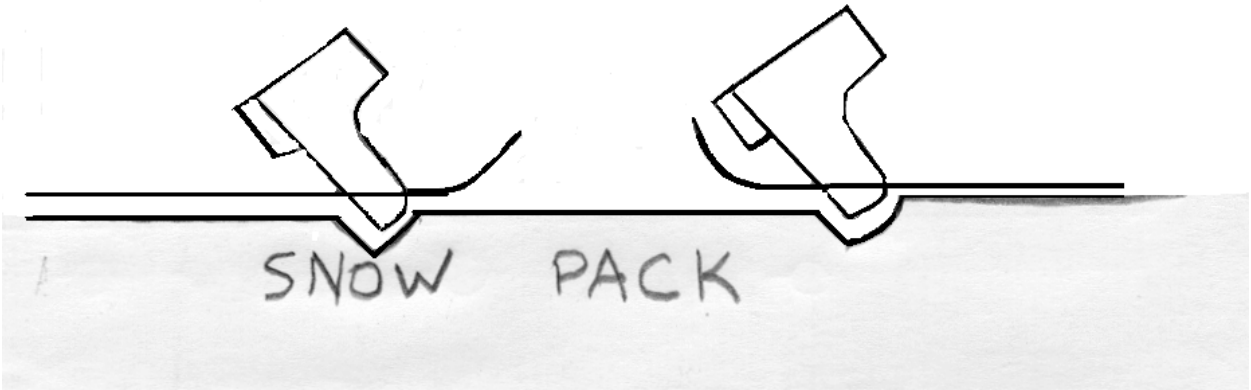
c. Once the initial track is found, completely document and sketch it for future reference. This sketch will prevent you from following the wrong track later on. Record the following information.

d. Determining Direction. This generally is not a problem with animals. Man's over-the-snow equipment may confuse a tracker. All forward movement will displace snow forward, or referred to as "fluffing". This fluffing is the key. As it begins to melt, pockmarks will be left on the level snow pack.

(1) Fluffing.

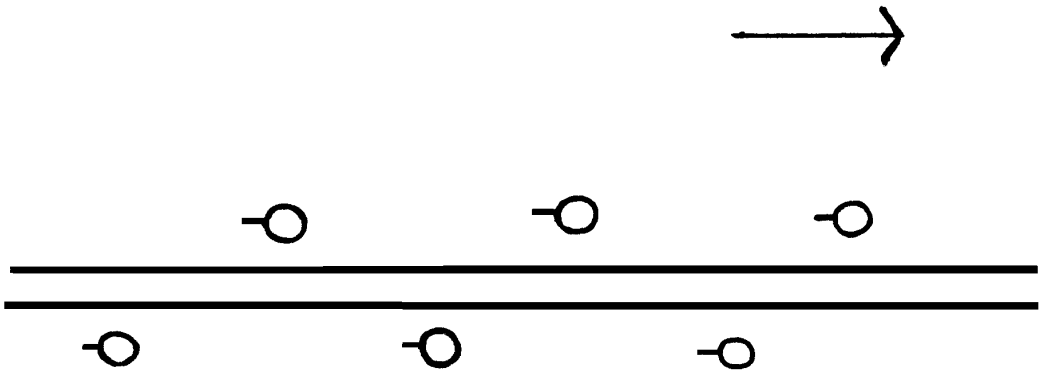


(2) Backward Snow Shoes. Inexperienced personnel may believe that walking backwards in snow shoes will fool someone. This type of activity is extremely exhausting and will not confuse an experienced tracker.



WALKING BACKWARDS IN SNOW SHOES

(3) Skier. As the ski pole is planted and the ski moves forward, the basket will also angle forward, causing the basket to dig into the snow, leaving an indent on the forward edge indicating direction. The point of the ski pole will also contact the snow before the pole is planted, making a line pointing away from the direction.



SKIING DIRECTION

(4) Snowmobile and tracked vehicles. Fluffing and direction determination is difficult to determine with snowmobile and tracked vehicles. The tracks will compress snow inside the track, forming plates. These plates are the keys to determining direction. At ground level, the vast majority of plates will face the direction of travel, although a small amount will face in the opposite direction.

DETERMING TRACKED VEHICLE DIRECTION

e. Tracking Teams. If tracking teams are available, "sign cutting" can speed up the tracking process.

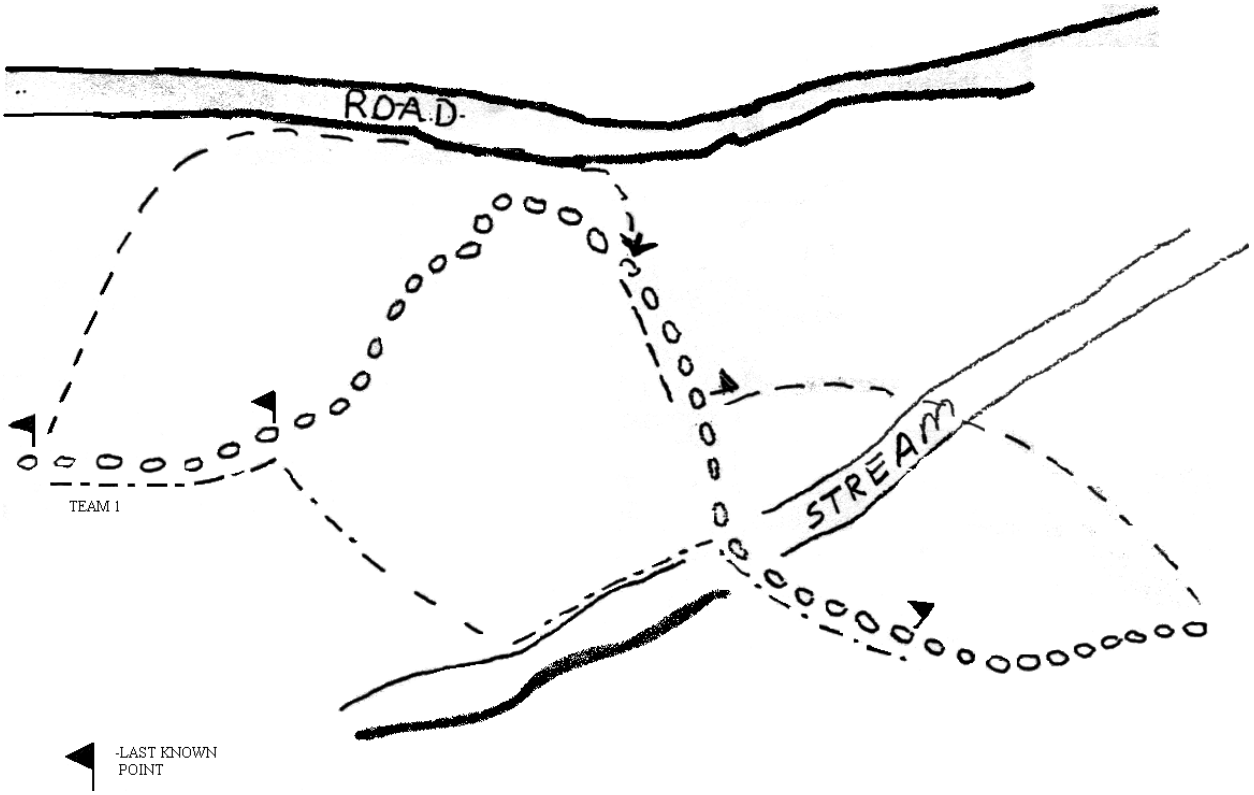
(1) All tracking teams (minimum of two) must document and sketch the initial track.

(2) The initial team continues to track until another tracking team has positively found the same track further ahead on the trail. The last track is marked for future reference.

(3) The second team assumes the responsibility of locating each track until they have been radioed by the first team that "they have found the track". This is "sign cutting".

(4) "Sign cutting" is accomplished by making large sweeping arcs ahead of the primary tracking team until the track is located at which time the teams change roles by "leap frogging".

(5) If the track is lost or misidentified, the teams will move back to the last marked track.



HYPOTHETICAL SEARCH

f. Delaying a tracker or tracking teams. If you are being tracked, your primary concern is to gain as much distance between yourself and the tracker. The more distance you gain, the more time to enable you to create devices to discourage a tracker.

(1) Create simple pathguards along your trail. An experienced tracker will not pick up things along the trail because of the possibility of being "booby trapped". If he notices possible traps, he will use more caution and slow his pace.

(2) Use caution when moving along the trail. When traveling, make it difficult for the tracker to find your tracks.

(a) Although this is difficult in snow, staying in the tree line will reduce the possibility of being discovered by aircraft.

(b) Do not brush up against snow covered saplings and large branches. When the snow is missing, the green foliage is like a billboard.

(3) Backfill all tracks leading towards your bivouac. When in a small unit, or the tactical situation dictates, backfill your jump off point with snow. This is accomplished by filling some type of bag with snow from your bivouac site and completely filling in all holes from the main track until no longer seen from the main track. Make sure that the filler snow is completely blended in with the top layer of the snow pack.

REFERENCE:

1. David Scott Donelan, Tactical Tracking Operation, 1998
2. Tom Brown, Field Guide to Nature Observation and Tracking, 1983

UNITED STATES MARINE CORPS
Mountain Warfare Training Center
Bridgeport, California 93517-5001

STUDENT HANDOUT

SURVIVAL MEDICINE

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, execute survival medicine techniques, in accordance with the references. **(WSVX.02.14)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, list in writing the requirements for maintenance of health, in accordance with the reference. **(WSVX.02.14a)**

(2) Without the aid of references, list the in writing the environmental injuries, in accordance with the reference. **(WSVX.02.14b)**

(3) Without the aid of references, define in writing the definition of hypothermia, in accordance with the reference. **(WSVX.02.14c)**

(4) Without the aid of references, list in writing the general considerations for medevac procedures, in accordance with the reference. **(WSVX.02.14d)**

(5) Without the aid of references, execute preventive measures against wildlife diseases, in accordance with the reference. **(WSVX.02.14e)**

OUTLINE

1. REQUIREMENTS TO MAINTAIN HEALTH. Maintenance of health is the first step in preventing injuries. The three requirements are: **(WSVX.02.14a)**

A. WATER

(1) A person can not survive without water for more than a few days. Your body loses water through normal body processes (sweating, urinating, and breathing). During normal activity the kidneys excrete 1 to 2 quarts of water per day and a person evaporates . 5 to quart per day. Other factors, such as heat exposure, cold exposure, intense activity, high altitude, burns, or illness, can cause your body to lose more water. Water intake is critical in preventing illness.

B. FOOD

(1) The body can live several weeks without food. However, without an adequate supply to stay healthy your mental and physical capabilities will deteriorate rapidly. Food supplies the body with the necessary nutrients and energy to survive.

(2) Food sources are plants, animals, and fish.

(a) Fiber. Fiber prevents irritable bowel syndrome. In the Falklands campaign the British had a major constipation and diarrhea problem. This was largely caused by dehydration and a low fiber diet. Grasses and pine needles are a good source of dietary fiber.

(b) Vitamins. Vitamins are essential to metabolic functioning of the body and cold weather compounds this function. Our bodies cannot make vitamins so we must provide them in our diet. Most edible plant life contains many different vitamins. Associated illnesses from long term deficiency are Scurvy (vitamin C) a physical disease and Beriberi (vitamin B1) a mental disease. Vitamins can be found in the cambium layer of trees, pine needles, and stinging nettle.

(c) Minerals. The mineral that we are primarily concerned with is Iron. Iron deficiency causes a 9% decrease in heat energy production. Iron acts as a thermo regulator. Consuming only 1/3 RDA of iron results in a 29% greater heat loss during cold exposure. Animal blood, dandelions, stinging nettle, and marrow provide the major source of iron. Ensure these foods are properly prepared.

(d) Calories. To produce energy, the body uses calories. Proteins, fats, or carbohydrates produce calories. Of these three, certain ones produce better energy than others do. Animal meat is an excellent source for caloric intake, although nuts from pinecones can supplement it.

1. Protein. Proteins are a reparative food of complicated molecules composed of chains of amino acids. There are numerous kinds of amino acids which cannot be synthesized by the body and thus must be consumed in the diet. A pure protein diet can cause fatalities in 3-8 weeks from *Rabbit Starvation*, a term used for living on a relatively fat free rabbit diet. Protein can be found in dandelions, nuts, and meats.

2. Fat. Fats serve as the main storage form of energy. Fats produce energy and heat. Fats are best obtained from bone marrow, liver, or the stomach portion of fish

3. Carbohydrates. Carbohydrates are known as the quick energy food. They produce lots of heat. They are stored in the liver and muscles. These organs are not large and can be markedly depleted by fasting for as short as 24 hours. Cattails, nuts are a source for carbohydrates.

C. PERSONAL HYGIENE

(1) Cleanliness is an important factor in preventing infection and disease. It becomes even more important in a survival situation.

(2) The areas to pay special attention to are the feet, hands, armpits, crotch, and hair. Visual and physical inspections should be conducted daily. Hand and finger nails should be kept as clean as possible to prevent infection of mucous membrane.

(a) Soap (lye) can be made from animal fat and ashes.
(b) Sun bath

(3) Teeth are another important area to keep clean. Brush your teeth each day either with a toothbrush, or if you don't have one, make a chewing stick.

(a) A chewing stick is made out of a twig about 6 to 8 inches long. Chew one end of the stick to separate the fibers. Now you can brush your teeth.

2. FIVE WAYS THE BODY LOSES HEAT

A. Radiation: is direct heat loss from the body to its surroundings. If the surroundings are colder than the body, the net result is heat loss. A nude man loses about 60% of his total body heat by radiation. Specifically, heat is lost in the form of infrared radiation. Infrared targeting devices work by detecting radiant heat loss.

B. Conduction: is the direct transfer of heat from one object in contact with a colder object.

(1) Most commonly conduction occurs when an individual sits or rests directly upon a cold object, such as snow, the ground, or a rock. Without an insulating layer between the Marine and the object (such as an isopor mat), one quickly begins to lose heat. This is why it's important to not sit or sleep directly on cold ground or snow without a mat or a pack acting as insulation.

C. Convection: is heat loss to the atmosphere or a liquid.

Air and water can both be thought of as "liquids" running over the surface of the body. Water or air, which is in contact with the body, attempts to absorb heat from the body until the body and air or water is both the same temperatures. However,

if the air or water is continuously moving over the body, the temperatures can never equalize and the body keeps losing heat.

D. Evaporation . Heat loss from evaporation occurs when water (sweat) on the surface of the skin is turned into water vapor. This process requires energy in the form of heat and this heat comes from the body.

(1) This is the major method the body uses to cool itself down. This is why you sweat when you work hard or PT. One quart of sweat, which you can easily produce in an hour of hard PT, will take about 600 calories of heat away from the body when it evaporates.

E. Respiration. When you inhale, the air you breathe in is warmed by the body and saturated with water vapor. Then when you exhale, that heat is lost. That is why breath can be seen in cold air. Respiration is really a combination of convection (heat being transferred to moving air by the lungs) and evaporation, with both processes occurring inside the body.

3. PHYSICAL RESPONSES TO HEAT. When the body begins to create excess heat, it responds in several ways to rid itself of that heat.

A. Initially, the blood vessels in the skin expand, or dilate. This dilation allows more blood to the surface where the heat can more easily be transferred to the surroundings.

B. Soon afterwards, sweating begins. This contributes to heat loss through convection and evaporation.

4. PHYSICAL RESPONSES TO COLD. Almost the opposite occurs as with heat.

A. First, blood vessels at the skin surface close down, or constrict. This does two things:

(1) Less blood goes near the surface of the body so that less heat is lost to the outside.
(2) More blood goes to the "core" or the center of the body, to keep the brain, heart,lungs, liver, and kidneys warm. This means fingers and toes tend to get cold.

B. If that is not enough to keep the body warm, the next step is shivering. Shivering is reflexive regular muscular contractions, this muscular activity causes heat production. As mentioned before, shivering can only last for a short time before exhaustion occurs. With shivering you will either warm up, as usually occurs, or

continue to get colder and start to become hypothermic. Hypothermia will be discussed later.

5. **ENVIRONMENTAL INJURIES (WSVX.02.14b)** are cold weather injuries, dehydration, and altitude related illnesses.

A. **COLD WEATHER INJURIES**:

1) **Hypothermia (MSVX.02.14c)** is the state when the body's core temperature falls to 95 degrees Fahrenheit or less. **It is the number one killer of people in a survival situation**. A common belief that extremely cold temperatures are needed for hypothermia to occur is not true. Most cases occur when the temperature is between 30 and 50 degrees Fahrenheit. This is the normal temperature range at MWTC, except during the harshest of winter.

a) Causes of Hypothermia. The ways in which the body generates and loses heat has been discussed earlier. Quite simply, hypothermia occurs when heat loss from the body exceeds the body's ability to produce heat. Contributing factors include:

- Ambient temperature. Outside air temperature.
- Wind chill. This only affects improperly clothed individuals.
- Wet clothing.
- Cold water immersion.
- Improper clothing.
- Exhaustion.
- Alcohol intoxication, nicotine and drugs such as barbiturates and tranquilizers.
- Injuries. Those causing immobility or major bleeding, major burn and head trauma.

b) Signs and symptoms of Hypothermia

- The number one sign to look for is altered mental status; that is, the brain is literally getting cold. These signs might include confusion, slurred speech, strange behavior, irritability, impaired judgment, hallucinations, or fatigue.
- As hypothermia worsens, victims will lose consciousness and eventually slip into a coma.

- Shivering. Remember that shivering is a major way the body tries to warm itself early on, as it first begins to get cold. Shivering stops for 2 reasons:

- The body has warmed back up to a normal temperature range.

- The body has continued to cool. Below 95°F shivering begins to decrease and by 90°F it ceases completely.

- Obviously, continued cooling is bad. So if a Marine with whom you are working, who was shivering, stops shivering, you must determine if that is because he has warmed up or continued to cool.

- A victim with severe hypothermia may actually appear to be quite dead, without breathing or a pulse. However, people who have been found this way have been successfully "brought back to life" with no permanent damage. So remember, ***you are not dead until you are warm and dead***.

c) Prevention of Hypothermia

- Obviously, prevention is always better (and much easier) than treatment.

- Cold weather clothing must be properly warm and cared for.

- Keep your clothing as dry as possible.

- If your feet are cold, wear a hat. Up to 80% of the body's heat can escape from the head.

- Avoid dehydration. Drink 6 - 8 quarts per day.

- Eat adequately.

- Avoid fatigue and exhaustion.

- Increase levels of activity as the temperature drops. Do not remain stationary when the temperature is very low. If the tactical situation does not permit moving about, perform isometric exercises of successive muscles.

- Use the buddy system to check each other for signs/symptoms of hypothermia.

d) Treatment of Hypothermia.

- Make the diagnosis.
- Prevent further heat loss.
- Remove the victim from the environment (i.e., into a shelter or snow cave).
- Insulate the victim.
- Rewarm the victim by:
  *Zip two sleeping bags together.
  *Pre-warm the bag by a stripped Marine.
  *Place the victim in the bag with 2 stripped Marines inside on both sides of the victim.
- Medevac if possible.

e) Other Points to Remember.

- Fluids. If the victim is mildly hypothermic, he may be given hot wets. Otherwise give him nothing by mouth.

- Avoid, if possible, excessive movement of the victim, as his heart may stop beating if it is jarred.

- Major Wounds. Apply first aid to major wounds first, before attempting to re-warm the victim. Re-warming a victim who has bled to death does little good.

- Never give alcohol to hypothermia victims.

- Even after you have started re-warming a victim, he must be constantly monitored. Don't forget about him.

2) **FROSTBITE** Frostbite is the actual freezing of tissues. When in a survival situation, rewarming a severe frostbitten area will not help. It is best to wait for rescue and medical attention.

a) Prevention of Frostbite. Frostbite is an entirely preventable injury.

- Dress in layers. Keep comfortably cool. If you begin to become uncomfortable, add layers.
- Keep clothes dry. If clothing (especially socks and gloves) become wet, change them. This may mean you have to change sock 4-5 times a day.
- Dress properly. If the wind is blowing, wear the correct protective layer.
- Avoid dehydration. When dehydrated, the amount of blood available to warm your fingers and toes goes down, increasing the risk of frostbite.
- Avoid Starvation. Remember - Food is Fuel - and the body uses that fuel to make heat.
- **Leadership must ensure that preventive measures are taken.**

b) Signs and Symptoms of Frostbite.

- Ears, nose, fingers and toes are affected first.
- Areas will feel cold and may tingle leading to....
- Numbness which progresses to...
- Waxy appearance with skin stiff and unable to glide freely over a joint.

c) Treatment of Frostbite. Frostbite is classified into three different degrees: Frosting, Superficial Frostbite, and Deep Frostbite.

- Frosting will revert to normal after using the technique of body heat rewarming.
- Hold the affected area, skin to skin for 15 minutes.
  *Rewarm face, nose, and ears with hands.
  *Rewarm hands in armpits, groin or belly.
  *Rewarm feet with mountain buddy's armpits or belly.
- If affected area cannot be rewarmed in 15 minutes, Superficial Frostbite or Deep Frostbite is suspected.

Do not attempt to further rewarm
Splint the affected area.
Protect the affected area from further injury.
Medevac as soon as possible.
DO NOT RUB ANY COLD INJURY WITH SNOW.
Do not massage the affected area.
Do not rewarm with stove or fire: a burn injury may result.
Loosen constricting clothing.
Avoid tobacco products.

d) Treatment of Superficial or Deep frostbite. Any frostbite injury, regardless of severity, is treated the same – evacuate the casualty and re-warming in the rear. Unless the tactical situation prohibits evacuation or you are in a survival situation, *no consideration should be given to re-warming frostbite in the field.* The reason is something-called freeze – thaw – re-freeze injury.

- Freeze – Thaw – Re-freeze injury occurs when a frostbitten extremity is thawed out, then before it can heal (which takes weeks and maybe months) it freezes again. This has devastating effects and greatly worsens the initial injury.

- In an extreme emergency it is better to walk out on a frostbitten foot than to warm it up and then have it freeze again.

- Treat frozen extremities as fractures - carefully pad and splint.

- Treat frozen feet as litter cases.
- Prevent further freezing injury.
- Do not forget about hypothermia. Keep the victim warm and dry.
- Once in the rear, a frostbitten extremity is re-warmed in a water bath, with the temperature strictly maintained at 101°F - 108°F.

3) SNOW BLINDNESS

a. Definition. Sunburn of the cornea.

b. Causes of Snow Blindness. There are two reasons Marines in a winter mountainous environment are at increased risk for snow blindness.

- High altitude. Less ultraviolet (UTV) rays are filtered out, UV rays are what cause snow blindness (as well as sunburn). So at altitude, more UV rays are available to cause damage.
- Snow. The white color of snow reflects much more LTV rays off of the ground and back into your face.

c. Signs and Symptoms of Snow Blindness.

- Painful eyes.
- Hot, sticky, or gritty sensation in the eyes, like sand in the eyes.
- Blurred vision.
- Headache may be severe.
- Excessive tearing.
- Eye muscle spasm.
- Bloodshot eyes.

d. Prevention of Snow Blindness. Prevention is very simple. Always wear sunglasses, with UV protection. If sunglasses are not available, then field expedient sunglasses can be made from a strip of cardboard with horizontal slits, and charcoal can be applied under the eyes to cut down on reflection of the sun off the snow.

e. Treatment of Snow Blindness.

- Evacuation, when possible.

- Patch the eyes to prevent any more light reaching them.

- Wet compresses, if it is not too cold, may help relieve some of the discomfort.

- Healing normally takes two days for mild cases or up to a week for more severe cases.

4) **TRENCHFOOT / IMMERSION FOOT**

a) Definition. This is a cold - wet injury to the feet or hands from prolonged (generally 7 - 10 hours) exposure to water at temperatures above freezing.

b) Causes of Trench foot/Immersion Foot. The major risk factors are wet, cold and immobility.

c) Signs and Symptoms of Trench foot/Immersion Foot.

- The major symptom will be pain. Trench foot is an extremely painful injury.

- Trench foot and frostbite are often very difficult to tell apart just from looking at it. Often they may both be present at the same time. Signs include:

- Red and purple mottled skin.

- Patches of white skin.

- Very wrinkled skin.

- Severe cases may leave gangrene and blisters.

- Swelling.

- Lowered or even absent pulse.

- Trench foot is classified from mild to severe.

d) Prevention of Trench foot/Immersion Foot is aimed simply at preventing cold, wet and immobile feet (or hands).

- Keep feet warm and dry.

- Change socks at least once a day. Let your feet dry briefly during the change, and wipe out the inside of the boot. Sock changes may be required more often.

- Exercise. Constant exercising of the feet whenever the body is otherwise immobile will help the blood flow.

e) Treatment of Trench foot/Immersion Foot.

- All cases of trench foot must be evacuated. It cannot be treated effectively in the field.

- While awaiting evacuation:
  The feet should be dried, warmed, and elevated.
  The pain is often severe, even though the injury may appear mild; it may require medication such as morphine.

- In the rear, the healing of trench foot usually takes at least two months, and may take almost a year. Severe cases may require amputation. *Trench foot is not to be taken lightly.*

B. DEHYDRATION

1. **Dehydration** is a deficit of total body water. Dehydration will compound the problems faced in a survival situation. Dehydration is the **second leading cause of all deaths in a survival situation**.

   a) Symptoms. When dehydrated, the following signs and symptoms will appear:

   - Headache and nausea.

   - Dizziness and fainting.

   - Cramps, both abdominal and extremity.

   - Weakness and lethargy.

   - Dark urine with a very strong odor.

   b) Prevention. Prevention is the key to prevent dehydration. The following are basic guidelines for the prevention of dehydration:

   - Always drink water when eating. Water is used and consumed as a part of the digestion process. If you have plenty of food but no water – Do not eat until a source of water can be found.

   - Conserve energy. Pace yourself.

- Drink 6-8 quarts of water per day when available. In other words, continually drink through out the day. Don't wait until you are dehydrated.

- Monitor the color of your urine.

- Don't rely on thirst as an indicator.

2. **Heat related illnesses**. The following illnesses will appear from dehydration:

    1. Heat syncope. Heat syncope is feinting due to vaso-dilation from the heat.

    2. Heat exhaustion. Heat exhaustion occurs when body salt losses and dehydration from sweating are so severe that a person can no longer maintain adequate blood pressure. Heat exhaustion can lead to heat stroke.

        a) Symptoms include; headaches, nausea, dizziness, fatigue, and fainting.

    3. Heat stroke. Heat stroke is a failure of the body's cooling mechanisms that rid the body of excessive heat build up.

        a) Signs and symptoms
        Symptoms are the same as heat exhaustion . The signs include delirious or coma, pinpoint pupils, flushed skin, sweating may or may not be present.

        b) Heat cramps. Heat cramps are painful spasms of skeletal muscle as a result of body salt.

        c) All of these illnesses can be detrimental to your survival. Dress properly, rest and **adequate water intake** can help prevent these illnesses.

C. ALTITUDE RELATED ILLNESSES:

1. Acute Mountain Sickness. Acute Mountain Sickness (AMS) is a self-limiting illness due to the rapid exposure of an unacclimatized individual to high altitude (i.e., helicopter crash on a mountain). Approximately 25% of individuals who ascend rapidly to 8,000 – 9,000 feet will develop AMS. Virtually, all un-acclimatized persons who rapidly ascend to 11,00 – 12,000 feet will develop AMS.

(a) Signs and symptoms include; apathy, dizziness, easily fatigued, nausea, decreased appetite, headache. Can be misdiagnosed as dehydration. If

adequate fluid intake is maintained and headache still persists rule out dehydration.

2. HACE. HACE or High Altitude Cerebral Edema is swelling of the brain

(a) Sign and symptoms are similar to AMS and accompanied by bizarre behavior, hallucinations, confusion, and severe cases – coma.

3. HAPE. High Altitude Pulmonary Edema is the filling of the lungs with fluid.

(a) Signs and symptoms include; persistent cough with pink frothy sputum, shortness of breath, disorientation, fainting, cool and clammy skin, blue lips

(1) Treatment **Descend, Descend, and Descend.** HACE and HAPE can result in death.

(2) Prevention Gain elevation slowly. 10,000 feet move 1000 feet per day over 14,000 move no faster than 500 – 1,000 feet per day. Rest and acclimatize your body.

A. CARBON MONOXIDE POISONING

1. Definition. Carbon Monoxide (CO) is a heavy, odorless, colorless, tasteless gas resulting from incomplete combustion of fossil fuels. CO kills through asphyxia even in the presence of adequate oxygen, because oxygen-transporting hemoglobin has a 210 times greater affinity for CO than for oxygen. What this means is that CO replaces and takes the place of the oxygen in the body causing Carbon Monoxide poisoning.

2. Signs/Symptoms. The signs and symptoms depend on the amount of CO the victim has inhaled. In mild cases, the victim may have only dizziness, headache, and confusion; severe cases can cause a deep coma. Sudden respiratory arrest may occur. The classic sign of CO poisoning is cherry-red lip color, but this is usually a very late and severe sign, actually the skin is normally found to be pale or blue.

CO poisoning should be suspected whenever a person in a poorly ventilated area suddenly collapses. Recognizing this condition may be difficult when all members of the party are affected.

3. Treatment. The first step is to immediately remove the victim from the contaminated area.

a) Victims with mild CO poisoning who have not lost consciousness need fresh air and light duty for a minimum of four hours. If oxygen is available administer it. More severely affected victims may require rescue breathing.

b) Fortunately, the lungs excrete CO within a few hours.

c) Prevention. Ensure there is adequate ventilation when utilizing a fire near your shelter.

6. **MEDICAL AID**. Unfortunately, during a survival situation, a corpsman may not always be available to render assistance. Therefore, the survivor must be knowledgeable in basic first aid as taught in the Marine Battle Skills Training Handbook.

A **Four Life Saving Steps**

1) Start the breathing.
2) Stop the bleeding.
3) Treat the wound.
4) Check for shock.

B. **Wounds**. Wounds are actual breaks in the integrity of the skin. Wounds can be caused by accident or by animals. These wounds are most serious in a survival situation, not only because of tissue damage and blood loss, but also because of infection. By taking proper care of the wound you can reduce the chance of a debilitating infection.

C. **Animals. Prevention** of an animal bite is best accomplished through knowledge of behavior, personalities, and patterns.

1) Animals generally give ample warning of their intentions, which are to repel the intruder or permit its escape. Animals that act out of character and approach humans should be considered rabid and avoided.

2) Tearing, cutting, and crushing injuries are combined in animal bites. Always look for secondary injuries.

B. D. **First Aid.** Whether the wound was caused by accident or by animal, the treatment remains the same.

1) Early cleansing of the wound reduces the chance of bacterial infection and is extremely effective in removing rabies and other viruses. Cleanse by irrigation. Bleeding wounds also helps the irrigation process initially.

2) Open wound management is best described by the "open treatment" method. Do not try to suture or close the wound. This will seal any dirt or infection into the wound. As long as the wound can drain it will usually not become life threatening.

a) Maggots
b) Super glue

c) Shunt

3) **Tourniquet in a survival situation**. If no rescue or medical aid is likely for over 2 hours, an attempt to **SLOWLY** loosen the tourniquet may be made 20 minutes after it is applied:

a) Ensure pressure dressing is in place.

b) Ensure bleeding has stopped.

c) Loosen tourniquet SLOWLY to restore circulation.

d) Leave loosened tourniquet in position in case bleeding resumes.

e) Bandaging is meant to protect the wound from foreign objects (i.e., dirt).

f) As with any injury to the body you must increase water intake, more so with an open wound.

E. **Herbal Medicines**

1) Consider using herbal medicines only after proper training and when you lack or have limited medical supplies.

2) **WARNING Some herbal medicines are dangerous and may cause further damage or even death.**

7. **CASUALTY EVACUATION**. Casualty evacuation in a cold weather mountainous environment will require a well thought out plan prior to conducting. Poorly planned evacuations will possibly result in additional casualties, lost time, and equipment damage. In a group survival situation expedient litter will have to be constructed in order to transport the patient effectively.

A. **General Considerations**. **(WSVX.02.14d)** The following considerations are critical for planning a successful evacuation. A useful acronym to use is "APASSNGG".

1) Apply Essential First Aid. (i.e., splints, pressure bandage, etc.)

2) Protect the Patient form the Elements. Provide the casualty with proper insulation and ensure that he is warm and dry.

3) Avoid Unnecessary Handling of the Patient.

4) Select the Easiest Route. Send scouts ahead if possible, to break trails.

5) Set Up Relay Points and Warming Stations. If the route is long and arduous, set up relay points and warming stations to switch stretcher-bearers and assess the casualty.

6) Normal litter teams must be augmented in Arduous Terrain.

7) Give Litter Teams Specific Goals to work towards. This job is extremely tiring, both physically and mentally.

8) Gear. Ensure all of the patient's gear is kept with him throughout the evacuation.

8. **WILDLIFE DISEASES**. **(WSVX.02.14e)** When handling animals, whether dead or alive, individuals must use preventive measures against possible exposure to wildlife diseases. Although the possibility of disease is remote, certain signs may indicate that an animal may be diseased. The following are some of the more common diseases found in the United States and throughout the world.

A. Hantavirus Pulmonary Syndrome. Hantavirus, or HPS, is a serious respiratory illness that was first recognized in 1993 in an outbreak in New Mexico and Arizona. It is caused by a virus that is carried by a common field rodent called the deer mouse.

1) Method of Transmission. The virus is shed in the droppings, urine, and saliva of the deer mouse. The virus is transmitted to humans when the material dries, becomes airborne and is inhaled.

2) Signs & Symptoms. The disease begins with flu-like symptoms 3 to 45 days after exposure. The disease can rapidly progress into a life-threatening lower respiratory illness characterized by the flooding of the lungs with fluid.

3) Treatment. No cure or vaccine is yet available against infection. The sooner after infection medical treatment is sought, the better the chance of recovery.

4) Prevention. Mice should not be handled; rodent dens should not be disturbed. Package food so that rodents do not crawl all over it. Do not occupy shelters that may have contained rodents.

B. Plague. The cause of plague is *Yersinia pestis*, a bacterium that is maintained in nature through a complex flea-rodent cycle.

1) Method of Transmission. Infection in humans results by flea bites, direct contact with plague-infected rodents, or direct contact with affected non-rodent hosts such as rabbits, hares, cats, and occasionally other animals.

2) Signs & Symptoms. Infection in humans results in severe disease, with a fatality rate of over 50% in untreated cases. An abnormal swelling in the lymph nodes is usually present.

3) Treatment. Infected people must seek medical treatment.

4) Prevention. Animal noted with fleas should be avoided. In a survival situation, a killed animal should be immediately submerged into a cool water source until all the fleas are remove by water or have died.

C. Tick Borne Diseases.

1) Lyme Disease. Infection occurs most often between May and September. In some cases, a characteristic skin rash may develop at the site of the tick bite. The rash may expand to a diameter of 5 inches or more, and there may be an accompanying flu-like illness. If left untreated, infection can lead to chronic disease characterized by neurologic impairment, cardiac problems, or arthritis.

2) Rocky Mountain Spotted Fever. The incubation period in humans is 2-14 days. Initial symptoms are flu-like and commonly include fever, headache, muscle and joint pain, nausea, and vomiting. A rash may appear. The fatality rate in cases that are treated with antibiotics is about 5% and up to 25% that are untreated.

3) Treatment. Infected people must seek medical treatment.

4) Prevention. Daily body inspections should be conducted to remove all ticks.

D. Food Borne Diseases. Food borne illness, frequently called "food poisoning," is acquired by eating food that is contaminated with microbes or their toxins. Live animals may carry the agent, or contamination may occur from another source during processing or preparation of the food.

1) Botulism. Botulism probably is the most widely known and is generally caused by improper storage of meats. Symptoms may begin with vomiting and diarrhea but proceed to the characteristic impaired vision and descending paralysis. Botulism can be fatal.

2) Salmonella. The bacteria are found in the intestinal tracts and feces of a wide range of animals including poultry, swine, cattle, and household pets. Salmonella maybe fatal.

3) Trichinosis. Trichinosis is caused by a parasite contained within the muscle tissue. Most common carriers are wild swine and bear. Thorough cooking of meats will destroy the parasite.

4) Tularemia. Discovered in Tulare County, California. Tularemia has been reported in over 45 species of vertebrates; however, the disease most often involves ticks. It is also commonly found in rabbits and rodents. It is transmittable by uncooked meats or handling contaminated meats with open sores. Tularemia is a life-threatening disease found throughout the world and can only be treated with antibiotics.

5) Treatment. Consuming charcoal will aid in reducing the body's absorption rate. Medical treatment should be sought if available.

6) Prevention. Prevention of food borne diseases can be accomplished by:

a) Promptly dress game.

b) Avoid or minimize contamination by gastrointestinal contents.

c) **Cook food thoroughly.** Internal cooking temperatures should be 165 degrees F or more.

d) Eat cooked foods immediately.

e) Store preserved foods properly.

E. Animal Scat. Certain parasites found on scat can infect humans, if the scat is handled unprotected. Raccoon Roundworm can be found in the scat for at least 30 days, while Fox Roundworm will last only approximately 7 days on their scat. Both of these parasites can possibly infect human, which is almost fatal.

REFERENCE:

1. FM 21-76, Survival, 1996.
2. Paul S. Auerbach, Wilderness Medicine, 3rd Edition, 1995.
3. William R. Davidson, Field Manual of Wildlife Diseases in the United States, 2nd Edition, 1997

UNITED STATES MARINE CORPS

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WSVX.02.15
2/6/05

STUDENT HANDOUT

MOUNTAIN WEATHER

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, conduct weather forecasting, in accordance with the reference. **(WSVX.02.15)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of references, describe in writing each type of cloud, in accordance with the references. **(WSVX.02.15a)**

(2) Without the aid of references, state in writing the cloud progression for both a cold and warm front, in accordance with the references. **(WSVX.02.15b)**

(3) Without the aid of references, state in writing five signs of nature, in accordance with the references. **(WSVX.02.15c)**

OUTLINE

1. GENERAL

A. The earth is surrounded by the atmosphere, which is divided into several layers. The world's weather systems are in the troposphere, the lower of these layers. This layer reaches as high as 40,000 feet.

B. Dust and clouds in the atmosphere absorb or bounce back much of the energy that the sun beams down upon the earth. Less than one half of the sun's energy actually warms the earth's surface and lower atmosphere.

C. Warmed air, combined with the spinning (rotation) of the earth, produces winds that spread heat and moisture more evenly around the world. This is very important because the sun heats the Equator much more than the poles and without winds to help restore the balance, much of the earth would be impossible to live on. When the air-cools; clouds, rain, snow, hail, fog and frost may develop.

D. The weather that you find in any place depends on many things, i.e. how hot the air is, how moist the air is, how it is being moved by the wind, and especially, is it being lifted or not?

2. PRESSURE

A. All of these factors are related to air pressure, which is the weight of the atmosphere at any given place. The lower the pressure, the more likely are rain and strong winds.

B. In order to understand this we can say that the air in our atmosphere acts very much like a liquid.

C. Areas with a high level of this liquid would exert more pressure on the Earth and be called a "high pressure area".

D. Areas with a lower level would be called a "low pressure area".

E. In order to equalize the areas of high pressure it would have to push out to the areas of low pressure.

F. The characteristics of these two pressure areas are as follows:

(1) High-pressure area. Flows out to equalize pressure.

(2) Low-pressure area. Flows in to equalize pressure.

G. The air from the high-pressure area is basically just trying to gradually flow out to equalize its pressure with the surrounding air; while the low pressure is beginning to build vertically. Once the low has achieved equal pressure, it can't stop and continues to build vertically; causing turbulence, which results in bad weather.

> *NOTE*: *When looking on the weather map, you will notice that these resemble contour lines. They are called "isobars" and are translated to mean, "equal pressure area".*

H. Isobars. Pressure is measured in millibars or another more common measurement - "inches mercury".

I. Fitting enough, areas of high pressure are called "ridges" and areas of low pressure are called "troughs".

NOTE: The average air pressure at sea level is:

29.92 inches mercury.
1,013 millibars.

J. As we go up in elevation, the pressure (or weight) of the atmosphere decreases.

EXAMPLE: At 18,000 feet in elevation it would be 500 millibars vice 1,013 millibars at sea level.

3. **HUMIDITY**. Humidity is the amount of moisture in the air. All air holds water vapor, although it is quite invisible.

   A. Air can hold only so much water vapor, but the warmer the air, the more moisture it can hold. When the air has all the water vapor that it can hold, the air is said to be saturated (100% relative humidity).

   B. If the air is then cooled, any excess water vapor condenses; that is, it's molecules join to build the water droplets we can see.

   C. The temperature at which this happens is called the "condensation point". The condensation point varies depending on the amount of water vapor and the temperature of the air.

   D. If the air contains a great deal of water vapor, condensation will form at a temperature of $20^{O}C$ ($68^{O}F$). But if the air is rather dry and does not hold much moisture, condensation may not form until the temperature drops to $0^{O}C$ ($32^{O}F$) or even below freezing.

   E. Adiabatic Lapse Rate. The adiabatic lapse rate is the rate that air will cool on ascent and warm on descent. The rate also varies depending on the moisture content of the air.

      (1) Saturated Air = $2.2^{O}F$ per 1,000 feet.

      (2) Dry Air = $5.5^{O}F$ per 1,000 feet.

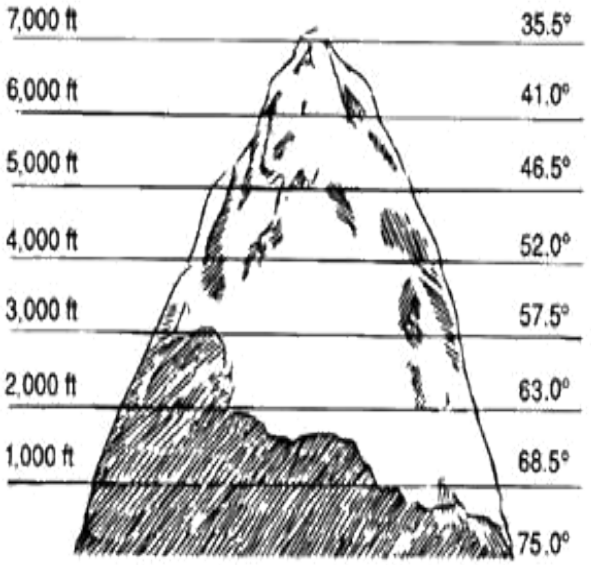


Figure 18 **Air temperature rises and cools at an even 5.5 degrees per 1,000 feet when no moisture is present.**

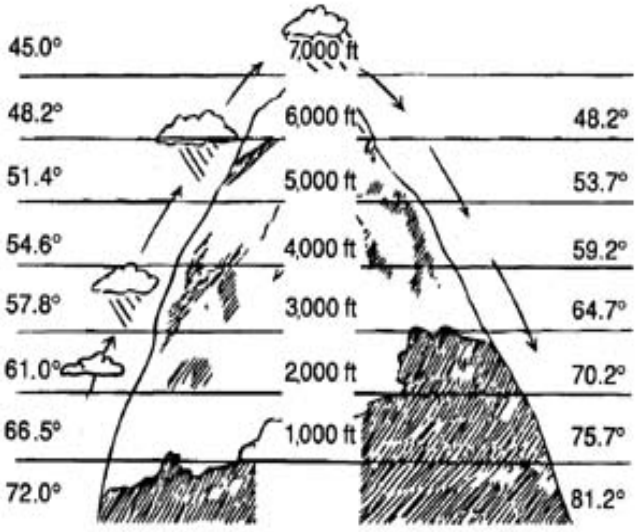


Figure 19 **Add condensation/moisture to the mix and the air cools at a slower rate (approximately 3.2 degrees per 1,000 feet) and then warms at a slower rate too until the moisture evaporates, illustrating adiabotic cooling and warming.**

4. **<u>WINDS</u>**. As we stated earlier, the uneven heating of the air by the sun and rotation of the earth causes winds. Much of the world's weather depends on a system of winds that blow in a set direction. This pattern depends on the different amounts of sun (heat) that the different regions get and also on the rotation of the earth.

   A. Above hot surfaces rising air creates a void. Cool air moves into and settles into the void. The cool air is either warmed up and begins to rise or it settles. This is dependent upon the sun's thermal energy. The atmosphere is always trying to equalize between high pressure and low pressure. On a large scale, this forms a circulation of air from the poles along the surface or the earth to the equator, where it rises and moves towards the poles again.

   B. Once the rotation of the earth is added to this, the pattern of the circulation becomes confusing.

   C. Because of the heating and cooling, along with the rotation of the earth, we have these surfaces winds. All winds are named from the direction they originated from:

      (1) <u>Polar Easterlies</u>. These are winds from the polar region moving from the east. This is air that has cooled and settled at the poles.

      (2) <u>Prevailing Westerlies</u>. These winds originate from approximately 30 degrees North Latitude from the west. This is an area where prematurely cooled air, due to the earth's rotation, has settled back to the surface.

      (3) <u>Northeast Tradewinds</u>. These are winds that originate from approximately 30 degrees North from the Northeast. Also prematurely cooled air.

   D. <u>Jet Stream</u>. A jet stream can be defined as a long, meandering current of high speed winds near the tropopause (transition zone between the troposphere and the stratosphere) blowing from generally a westerly direction and often exceeding 250 miles per hour. The jet stream results from:

      (1) Circulation of air around the poles and Equator.

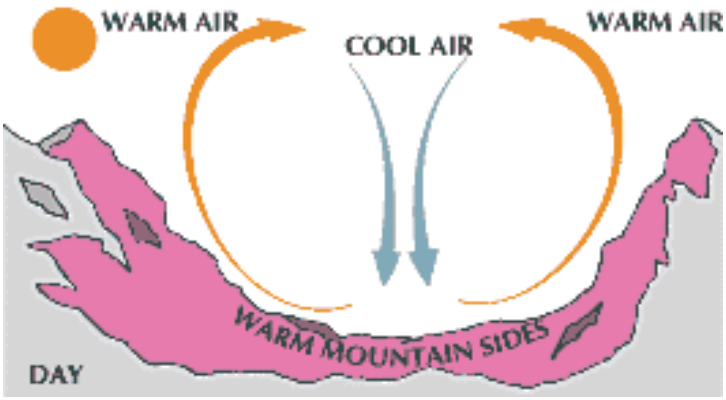
      (2) The direction of air flow above the mid latitudes.

      (3) The actual path of the jet stream comes from the west, dipping down and picking up air masses from the tropical regions and going north and bringing down air masses from the polar regions.

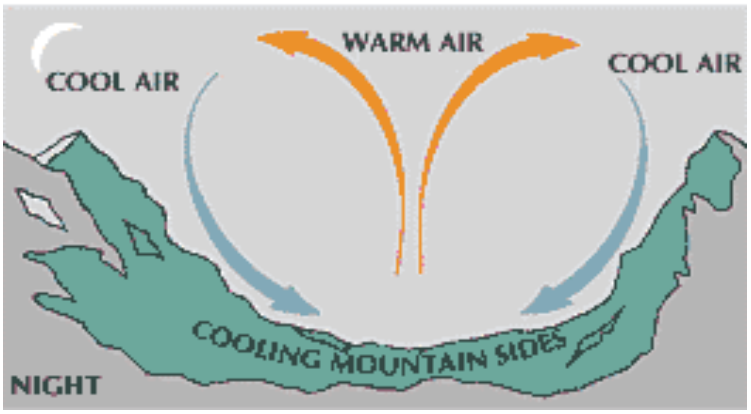
NOTE: *The average number of long waves in the jet stream is between three and five depending on the season. Temperature differences between polar and tropical regions influence this. The long waves influence day to week changes in the weather; there are also short waves that influence hourly changes in the weather.*

   E. Here are some other types of winds that are peculiar to mountain environments but don't necessarily affect the weather:

(1) Anabatic wind. These are winds that blow up mountain valleys to replace warm rising air and are usually light winds.



(2) Katabatic wind. These are winds that blow down mountain valley slopes caused by the cooling of air and are occasionally strong winds.



5. **AIR MASSES**. As we know, all of these patterns move air. This air comes in parcels known as "air masses". These air masses can vary in size from as small as a town to as large as a country. These air masses are named for where they originate:

   A. Maritime. Over water.

   B. Continental. Over land.

   C. Polar. Above 60 degrees North.

   D. Tropical. Below 60 degrees North.

   E. Combining these give us the names and description of the four types of air masses:

      (1) Continental Polar. Cold, dry air mass.

(2) Maritime Polar. Cold, wet air mass.

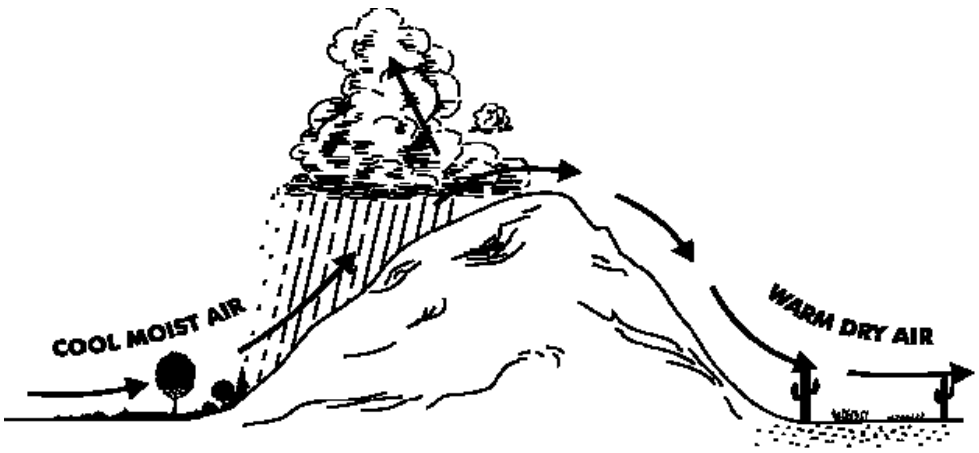
(3) Continental Tropical. Dry, warm air mass.

(4) Maritime Tropical. Wet, warm air mass.

F. The thing to understand about air masses, they will not mix with another air mass of a different temperature and moisture content. When two different air masses collide, we have a front which will be covered in more detail later in this period of instruction.

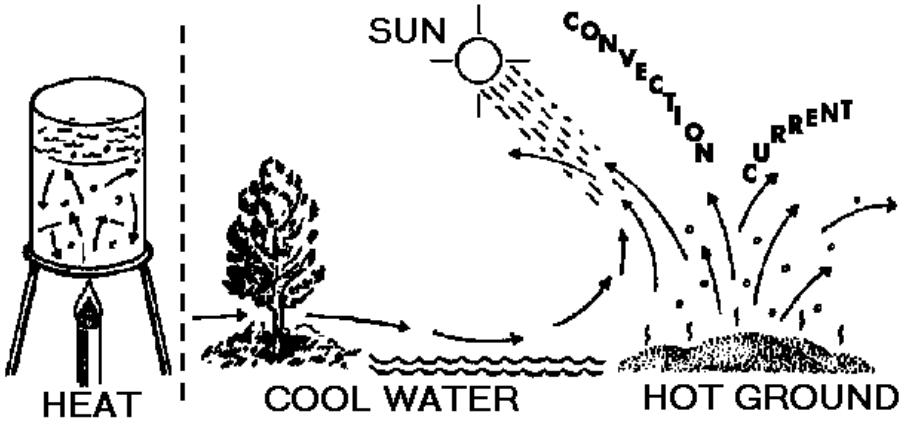
6. **LIFTING/COOLING**. As we know, air can only hold so much moisture depending on it's temperature. If we cool this air beyond its saturation point, it must release this moisture in one form or another, i.e. rain, snow, fog, dew, etc. There are three ways that air can be lifted and cooled beyond its saturation point.

A. Orographic uplift. This happens when an air mass is pushed up and over a mass of higher ground such as a mountain. Due to the adiabatic lapse rate, the air is cooled with altitude and if it reaches its saturation point we will receive precipitation.



OROGRAPHIC UPLIFT

B. Convention effects. This is normally a summer effect due to the sun's heat radiating off of the surface and causing the air currents to push straight up and lift air to a point of saturation.



CONVECTION EFFECTS

C. Frontal lifting. As we know when two air masses of different moisture and temperature content collide, we have a front. Since the air masses will not mix, the warmer air is forced aloft, from there it is cooled and then reaches its saturation point. Frontal lifting is where we receive the majority of our precipitation. A combination of the different types of lifting is not uncommon.

7. **CLOUDS**. **(WSVX.02.15a)** Anytime air is lifted or cooled beyond its saturation point (100% relative humidity), clouds are formed. Clouds are one of our sign posts to what is happening. Clouds can be described in many different ways, they can also be classified by height or appearance, or even by the amount of area covered, vertically or horizontally.

A. Cirrus. These clouds are formed of ice crystals at very high altitudes (usually 20,000 to 35,000 feet) in the mid-latitudes and are thin, feathery type clouds. These clouds can give you up to 24 hours warning of approaching bad weather, hundreds of miles in advance of a warm front. Frail, scattered types, such as "mare-tails" or dense cirrus layers, tufts are a sign of fair weather but predictive may be a prelude to approaching lower clouds, the arrival of precipitation and the front.

B. Cumulus. These clouds are formed due to rising air currents and are prevalent in unstable air that favors vertical development. These currents of air create cumiliform clouds that give them a piled or bunched up appearance, looking similar to cotton balls. Within the cumulus family there are three different types to help us to forecast the weather:

(1) Cotton puffs of cumulus are Fair Weather Clouds but should be observed for possible growth into towering cumulus and cumulonimbus.

(2) Towering cumulus are characterized by vertical development. Their vertical lifting is caused by some type of lifting action, such as convective currents found on hot summer afternoons or when wind is forced to rise up the slope of a mountain or possibly the lifting action that may be present in a frontal system. The towering cumulus has a puffy and "cauliflower-shaped" appearance.

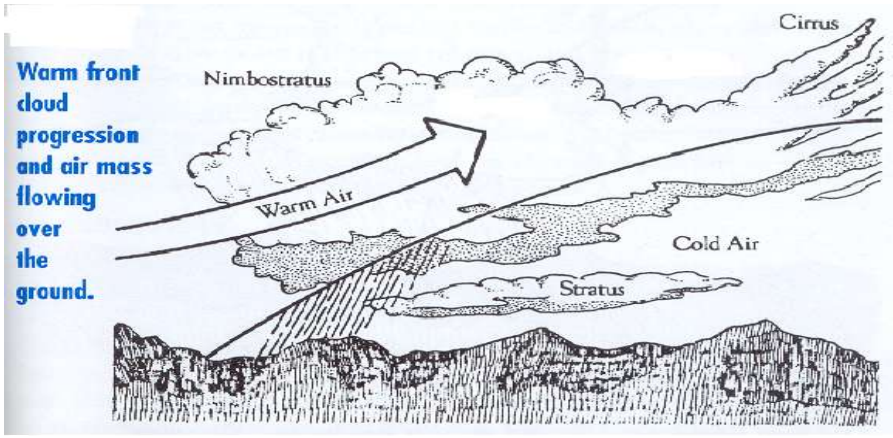
(3) Cumulonimbus clouds are characterized in the same manner as the towering cumulus, form the familiar "thunderhead" and produce thunderstorm activity. These clouds are characterized by violent updrafts which carry the tops of the clouds to extreme elevations. Tornadoes, hail and severe rainstorms are all products of this type of cloud. At the top of the cloud, a flat anvil shaped form appears as the thunderstorm begins to dissipate.

C. Stratus. Stratus clouds are formed when a layer of moist air is cooled below its saturation point. Stratiform, clouds lie mostly in horizontal layers or sheets, resisting vertical development. The word stratus is derived from the Latin word "layer". The stratus cloud is quite uniform and resembles fog. It has a fairly uniform base and a dull, gray appearance. Stratus clouds make the sky appear heavy and will occasionally produce fine drizzle or very light snow with fog. However, because there is little or no vertical movement in the stratus clouds, they usually do not produce precipitation in the form of heavy rain or snow.

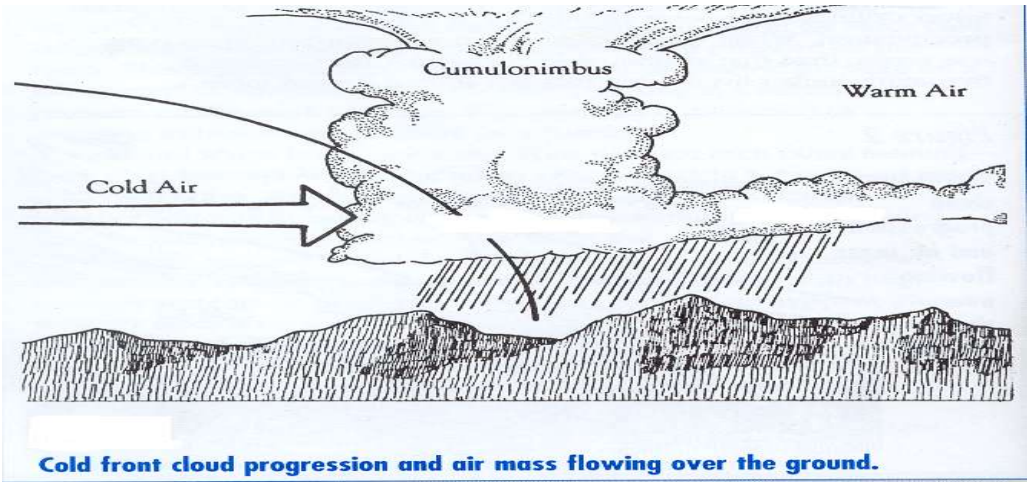
8. **FRONTS**. **(WSVX.02.15b)** As we know, fronts often happen when two air masses of different moisture and temperature content interact. One of the ways we can identify that this is happening is by the progression of the clouds.

A. Warm Front. A warm front occurs when warm air moves into and over a slower (or stationary) cold air mass. Since warm air is less dense, it will rise naturally so that it will push the cooler air down and rise above it. The cloud you will see at this stage is cirrus. From the point where it actually starts rising, you will see stratus. As it continues to rise, this warm air cools by the cold air and, this, receiving moisture at the same time. As it builds in moisture, it darkens becoming "nimbus-stratus", which means rain of thunderclouds. At that point some type of moisture will generally fall.

B. Cold Front. A cold front occurs when a cold air mass (colder than the ground that it is traveling over) overtakes a warm air mass that is stationary or moving slowly. This cold air, being denser, will go underneath the warm air, pushing it higher. Of course, no one can see this, but they can see clouds and the clouds themselves can tell us what is



happening. The cloud progression to look for is cirrus to cirrocumulus to cumulus and, finally, to cumulonimbus.



C. Occluded Front. Cold fronts move faster than warm ones so that eventually a cold front overtakes a warm one and the warm air becomes progressively lifted from the surface. The zone of division between cold air ahead and cold air behind is called a "cold occlusion". If the air behind the front is warmer than ahead, it is a warm occlusion. Most land areas experience more
occlusions than other types of fronts. In the progression of clouds leading to fronts, orographic uplift can play part in deceiving you of the actual type of front, i.e. progression of clouds leading to a warm front with orographic cumulus clouds added to these. The progression of clouds in an occlusion is a combination of both progressions from a warm and cold front.

9. **USING SIGNS FROM NATURE**. **(WSVX.02.15c)** These signs will give you a general prediction of the incoming weather conditions. Try to utilize as many signs together as possible, which will improve your prediction. All of these signs have been tested with relative accuracy, but shouldn't be depended on 100%. But in any case you will be right more times than wrong in predicting the weather. From this we can gather as much information as needed and compile it along with our own experience of the area we are working in to help us form a prediction of incoming weather. The signs are as follows:

A. Contrail Lines. A basic way of identifying a low-pressure area is to note the contrail lines from jet aircraft. If they don't dissipate within two hours, that indicates a low pressure area in your area. This usually occurs about 24 hours prior to an oncoming front.

B. Lenticulars. These are optical, lens-shaped cumulus clouds that have been sculpted by the winds. This indicates moisture in the air and high winds aloft. When preceding a cold front, winds and clouds will begin to lower.

C. An altimeter and map or a barometer can be utilized to forecast weather in the field. However, the user must have operational knowledge of the gear.

D. A spider's habits are very good indicators of what weather conditions will be within the next few hours. When the day is to be fair and relatively windless, they will spin long filaments over which they scout persistently. When precipitation is imminent, they shorten and tighten their snares and drowse dully in their centers.

E. Insects are especially annoying two to four hours before a storm.

F. If bees are swarming, fair weather will continue for at least the next half day.

G. Large game such as deer, elk, etc., will be feeding unusually heavy four to six hours before a storm.

H. When the smoke from a campfire, after lifting a short distance with the heated air, beats downward, a storm is approaching. Steadily rising smoke indicates fair weather.

I. A gray, overcast evening sky indicates that moisture carrying dust particles in the atmosphere have become overloaded with water; this condition favors rain.

J. A gray morning sky indicates dry air above the haze caused by the collecting of moisture on the dust in the lower atmosphere; you can reasonably expect a fair day.

K. When the setting sun shows a green tint at the top as it sinks behind clear horizon, fair weather is probable for most of the next 24 hours.

L. A rainbow in the late afternoon indicates fair weather ahead. However, a rainbow in the morning is a sign of prolonged bad weather.

M. A corona is the circle that appears around the sun or the moon. When this circle grows larger and larger, it indicates that the drops of water in the atmosphere are evaporating and that the weather will probably be clear. When this circle shrinks by the hour, it indicates that the water drops in the atmosphere are becoming larger, forming into clouds, rain is almost sure to fall.

N. In the northern hemisphere winds form the south usually indicate a low-pressure system. These systems are frequently associated with rainstorms. "Winds from the south bring s rain in it's mouth."

O. It is so quiet before a storm, that distant noises can be heard more clearly. This is due to the inactivity of wildlife a couple of hours before a storm.

P. Natural springs tend to flow at a higher rate when a storm is approaching. This is due to lower barometric pressure. This will cause ponds, with a lot of vegetative decay at the bottom, to become momentarily polluted.

Q. A heavy dew or frost in the morning is a sign of fair weather for the rest of the day. This is due to the moisture in the atmosphere settling on the ground vice in the form of precipitation and up to 12 hours of continued good weather can be expected.

UNITED STATES MARINE CORPS
Mountain Warfare Training Center
Bridgeport, California 93517-5001

WSVX.02.16
2/6/05

STUDENT HANDOUT

INTRODUCTION TO EVASION

TERMINAL LEARNING OBJECTIVE In a cold weather mountainous environment, demonstrate basic evasion techniques, in accordance with the references. **(WSVX.2.16)**

ENABLING LEARNING OBJECTIVES

(1) Without the aid of reference, list in writing the planning and preparation considerations for evasion, in accordance with the references. **(WSVX.2.16a)**

(2) Without the aid of reference, describe in writing the definition of a Selected Area For Evasion (SAFE), in accordance with the references. **(WSVX.2.16b)**

(3) Without the aid of reference, list in writing the steps taken during the occupation of a SAFE, in accordance with the references. **(WSVX.2.16c)**

OUTLINE

1. **PREPARING FOR A POTENTIAL EVASION SITUATION.** The Code of Conduct provides guiding principles to Marines involved in any military operation whether peacekeeping, combat, or survival. An operation that deteriorates so severely that a Marine unit is forced to employ survival skills may require that unit to "evade" hostile enemy units. JP 3-50.3 defines evasion as the process whereby individuals who are isolated in hostile or unfriendly territory avoid capture with the goal of successfully returning to areas under friendly control. Should a survival situation require evading the enemy, success will depend on prior planning.

    a. Planning and Preparation. **(MSVX.12.16a)** The responsibility for proper preparation and planning for evasion ultimately rests with the individuals concerned. All Marines who are tasked to execute any mission should receive the following:

        (1) Intelligence Briefings. Information on the mission route, enemy troop dispositions, impact of enemy operations on friendly or multinational military forces, status of the US or multinational military situation, or changing attitudes of the enemy populace.

        (2) Evasion Plan of Action (EPA). The EPA is one of the critical documents for successful recovery planning. It is the vehicle by which potential evaders, prior to their isolation in hostile territory, relay their after-isolation intentions to the recovery forces. See Appendix D, "Evasion Plan of Action Format," for details on the content of an EPA.

(3) Selected Areas for Evasion (SAFE) Area Intelligence Descriptions. **(WSVX.02.16b)** A SAFE is a "designated area in hostile territory that offers isolated personnel a reasonable chance of avoiding capture and of surviving until they can be recovered."

(a) They are designated by the Defense Intelligence Agency (DIA) and are classified.

(b) Designed to facilitate extended evasion, which must meet certain requirements for approval.

(4) E&R (Evasion and Recovery) Area Studies. E&R areas may be selected in any geographic region based on operational or contingency planning requirements. Although similar to SAFE areas in most respects, they differ in that not all conventional selection criteria for SAFE areas can be met because of current political, military, or environmental factors prevailing in the country.

(5) Survival, Evasion, Resistance, and Escape Guides and Bulletins. They contain the basic information to help an individual survive, successfully evade and, if captured, resist enemy exploitation. These bulletins cover information on topography and hydrography, food and water sources, safe and dangerous plants and animals, customs and cultures.

(6) Isolated Personnel Report (ISOPREP). When filled in, the DD Form 1833 is classified CONFIDENTIAL. It enables a recovery force to authenticate evaders.

2. **EXECUTING AN EVASION PLAN OF ACTION (EPA)**. Unforeseen circumstances may require Marines to execute their EPA.

a. Initial Planning. Immediately upon breaking contact, attempt to gain maximum distance between yourself and the enemy.

(1) Carefully consider METT-T during all planning and execution.

(2) Determine unit's combat effectiveness.

(3) Develop a course of action.

b. Movement techniques. If possible, the entire movement to friendly or neutral areas, as well as to designated SAFE areas or E&R areas should be completed without being observed. Furthermore, an appreciation of the methods by which a hostile force may attempt to detect you will assist in techniques to maximize your concealment.

(1) Methods to avoid enemy detection.

(a) Apply standard patrolling movement techniques.

(b) Avoid natural lines of drift and Main Supply Routes (MSR).

(c) Avoid all rural areas, small towns, and farms.

-Dogs and domestic poultry are very common and will provide a "first alert" needed to initiate a hostile search.

(2) Methods of detecting the evader.

(a) Direct Observation.

(b) Detection Equipment.

-Thermal imaging
-Active Infrared (IR), such as NVGs
-Acoustic detectors/sensors
-Direction finding equipment for radios

(c) Search teams.

-Military and/or civilian
-Trackers

(d) Dogs.

-Attack or tracking dogs
-Difficult to determine if being tracked by dogs
-Attempt to discourage the dog from doing its job

c. Occupation of a SAFE or E&R. **(WSVX.02.16c)** Prior to movement to, and occupation of a SAFE or E&R area, consider the following:

(1) Conduct a reconnaissance of the entire area for enemy threat. This may me a physical or visual reconnaissance.

(2) Select an occupation site which affords:

(a) Concealed escape routes if detected by enemy.

(b) Close proximity to a potential extraction site.

(c) Observation of the area and avenues of approach.

(3) Apply the requirements for survival.

(4) Execute the communication and signaling plan as ordered.

REFERENCE.

1. JP 3-50.3, Joint Doctrine for Evasion and Recovery, 1996.

UNITED STATES MARINE CORPS

Mountain Warfare Training Center
Bridgeport, California 93517-5001

WSVX.01.01

2/6/05

STUDENT HANDOUT

AVALANCHE AND ICE HAZARDS

LESSON PURPOSE. The purpose of this period of instruction is to introduce the student to avalanche and ice hazards, their characteristics, dangers, and how to protect yourself from them.

OUTLINE

1. **TYPES OF AVALANCHE:** There are four types of avalanches: Loose-snow, Slab, cornice collapse and Ice.

    a. Loose-snow Avalanches. Sometimes called point release slides, they start when a small amount of cohesion less snow breaks away and starts to descend down the slope. At a distance it will appear to look like they start from a point and fan out as they descend. They will start out small and usually involve only the top layers. This avalanche is capable of being quite large and destructive depending on the amount of material it will entrain during its descent.

        (1) The stress this avalanche creates during its descent may be enough to trigger larger and deeper slab releases

        (2) It occurs more often on steep slope angles of 35 degrees or higher.

        (3) It will range in speeds up to 200 mph.

    b. Slab Avalanches. These avalanches occur when one or more layers of cohesive snow break away from a sloped snowfield at the crown surface. As the slabs travel down slope, they break up into smaller blocks or clods.

        (1) Slab avalanches begin when the force of gravity pulling a layer or layers of snow downhill exceeds the strength of the weakest layer in the snow pack.

        (2) Slabs vary in size from just a few inches to many feet thick, and range in width from a few yards to over a mile. Slab material is also highly variable; slabs may be hard or soft, wet or dry.

        (3) Will range in speeds up to 150 mph.

(4) Features of a slab avalanche.

(a) Crown Face / Fracture Line. This is the upper boundary of the slab.

(b) Crown. This area is immediately above the crown face/fracture line.

(c) Flanks. This is the outer boundaries of the slab.

(d) Stauchwall. This is the bottom boundary of the slab.

(e) Bed Surface. The sliding surface for the avalanche.

(5) Slope angle. Slab avalanches originate on a wide variety of terrain. The main requirement is slope angle. Most slabs fracture on slope angles between 35-40 degrees.

(a) Slopes less than 30 degrees are less likely to have slab avalanches because there isn't enough tension of on the slab area.

(b) Slopes greater than 45 degrees usually sluff before slabs can form.

c. Cornice Collapses. An overhang of snow forms when windblown snow builds out horizontally at sharp terrain-breaks such as ridge crests and the sides of gullies. They can break off well back from the edge, and often trigger bigger slides when they hit the wind-blown pillowed area of the slope.

d. Ice Avalanches. These are caused by the collapse of unstable ice blocks (seracs) from steep or overhanging parts of a glacier. Ice avalanches can entrain a large amount of rock, ice, and snow and travel long distances. These avalanches are not predictable and cannot be detected.

2. **AVALANCHE TRIGGERS**. There are two types: natural and artificial.

a. Natural Triggers. These are not triggered directly by man or his equipment. A falling cornice, sluffing snow, stress change due to metamorphism, avalanche, etc., can all trigger avalanches.

b. Artificial Triggers. Man or his equipment triggers these. A ski pass, a mountaineer's weight, an explosive blast, a sonic boom, etc., commonly set off avalanches.

3. **PARTS OF AN AVALANCHE**

a. Starting zone. It is usually steeper than 30 degrees and receives large amounts of snow. This is where the unstable snow breaks loose and starts to slide.

b. Avalanche Track. Refers to the path under the starting zone and above the run out zone. They can be channeled or unchanneled. The track is the slope or channel down which snow moves.

(1) Channeled tracks are confined areas such as gullies and couloirs. Unconfined tracks are on open slopes. Some may have trees present.

(2) An avalanche track may have several branches or several small tracks having separate starting zones that may feed into one big track. It is important to remember that multi-branch tracks may run several times in quick succession. A number of rescuers have been killed when working a run out zone and a second avalanche ran down within hours of the first avalanche.

(3) Wet snow avalanches tend to follow the track boundary, whereas dry snow avalanches can easily jump terrain barriers.

c. Run out zones. This is the area at the bottom of the path where debris piles-up. Variation in weather patterns from one year to the next will influence the position of the run out zone. This is where the snow and debris slows down and comes to rest

4. **AVALANCHE HAZARD EVALUATION PROCESS**. The evaluation process is the interaction of four critical variables, which helps determine whether or not, an avalanche is possible. They are snow pack, weather, terrain, and the human factor.

a. The Snow Pack. Is the snow capable of sliding? As each storm passes, a new layer of snow is added, some by the wind some not, and every layer of snow has it's own texture and strength. Some layers will be strong while some will be weak. Some will bond well, and some won't. Although the study of snow metamorphism is a science, Marines must determine if a weak bond in the snow pack exists. Additionally, one must attempt to estimate the amount of snow that could be potentially released, if triggered.

b. The Weather. Is the weather contributing to instability? It is an observed fact that all natural avalanches occur during or shortly after a storm. Why? The snow pack can't handle the new weight being added. This new weight alters the balance in strength and stress. The three main contributing factors are the precipitation, wind, and temperature.

(1) Signs of Instability.

(a) Recent avalanche activity on similar slopes and small avalanches underfoot.

(b) Booming. The audible collapse of snow layers.

(c) Visible cracks shooting out from underfoot.

(d) Sluffing debris, which is evidence of avalanche activity occurring.

(e) Sunballing, which is caused by rapid warming of the snow surface.

(f) Weather patterns.

1. Heavy amount of snow loading in a short period of time. (1 in/hr for 24 hr period).

2. Heavy rains which warms and weakens the snow pack.

3. Significant wind loading causing leeward slopes to possibly become overloaded.

4. Long, cold, clear, calm period followed by heavy precipitation or wind loading.

5. Rapid temperature rises to above freezing after long a cold period.

6. Prolonged periods (e.g. more than 24 hrs) of above-freezing temperatures.

7. Cold snow temperatures (equal to or less than 25F) slow down the settlement or strengthening process, thus allowing unstable snow conditions to persist longer.

(2) Signs of Stability.

(a) Snow cones or settlement cones form around trees and other obstacles and indicate the snow around the object is settling.

(b) Creep and Glide. Creep is the internal deformation of the snow pack. Glide is slippage of the snow layer with respect to the ground. Evidence of these two properties on the snow pack is a ripple effect at the bottom of a slope. It is an indication that the snow is gaining equilibrium and strength through this type of settlement process.

(c) Absence of wind during storms which is indicated by snow accumulation in the trees.

(d) Snow temperatures remaining between 25 & 32F ordinarily settles snow rapidly, creating a denser and stronger snow pack.

c. The Terrain. Being able to recognize avalanche terrain is a critical step in the evaluation process. Assuming that avalanches occur on only big slopes is a very common mistake. Avalanches can occur on any slope.

(1) Slope Angle. Slope angle should always be factored when planning movements in snow covered mountainous terrain.

(a) As the slope angle increases, so does the stress on the boundary regions of a slab.

(b) Most slab avalanches release on slopes with angles between 35-40 degrees.

(c) Loose snow avalanches occur on high angle slopes 60 degrees and above.

(2) Slope Orientation.

(a) Leeward, wind-loaded slopes tend to increase the stress on the snow pack.

(b) Snow packs moderately hit by the sun can strengthen and stabilize the snow pack.

(c) Direct sunlight has the opposite effect by weakening and lubricating the bonds between grains.

(d) Weak layers are often well developed or persist on shaded slopes due to the colder conditions and absence of solar warming during the winter. Suspect instability on these slopes.

(3) Terrain Roughness (Anchoring). Slopes with anchors are less likely to avalanche than open slopes.

(4) Vegetation. The most convincing evidence of past avalanche activity is a path of fallen trees, aligned in the same direction and sheared at the height above the ground.

(a) Trees void of branches on the uphill side, which are called "flagged" trees.

(b) Cleared strips of trees in a dense forest.

(5) Seasonal. Once an avalanche path has begun to slide in a season, other avalanches may occur a long the same path.

(6) Elevation. Temperature, wind and precipitation often vary significantly with elevation. Common differences include rain at lower elevations or differences in precipitation amounts, or wind speed with elevation. Never assume that conditions on a slope at a particular elevation reflect those of a slope at a different elevation.

(7) Local Population. A good source of information but beware of short-term observations, i.e., 10 years.

d. The Human Factor. What are your alternatives and their possible consequences?

e. Hazard Evaluation. This should be an on going process, and should start before the mission even begins.

(1) Before. Gather information on the weather such as new snowfall, high winds, snow advisories, and topography of the terrain. Find out any past history of the area and recent or past avalanche activity.

(2) During. During your movement, try and fine-tune any information that may help in your decision-making process and support the fact that there may be an avalanche hazard.

(3) Be Objective. We don't have options when assigned missions. You have to look at the overall mission with the present avalanche hazard to determine whether you should continue on or choose an alternate route.

5. **ROUTE CONSIDERATIONS**.

a. Determine starting zones of probable avalanche prone slopes and cross as high as possible, preferably above natural anchors.

b. Travel on high points and ridges, especially windward sides.

c. When ascending or descending an avalanche prone slope, stay to the side of the start zone and track.

d. Avoid wind-loaded, lee slopes.

e. Favor terrain with anchors, i.e. tree-covered areas over open slopes.

f. Pick areas with flat, open run-outs so that debris burial depth is decreased. Avoid areas that feed into crevasses and cliffs.

g. You can generally find a safe route somewhere in a wide U-shaped valley, but narrow V-shaped ones should be avoided. In V-shaped valleys, avalanches could run from either side and continue up the opposite side, so there may be little or no safe ground.

6. **CROSSING AVALANCHE PRONE SLOPES**. Certain requirements may make it necessary to cross a suspected slope. This should be done only ***AFTER*** all alternatives have been exhausted.

a. Individual Preparation.

(1) Loosen ski bindings; remove hands from ski pole straps.

(2) Leave your pack on and secure the pack straps.

(3) Secure ECWCS hood tightly covering face, trail an avalanche cord if available.

(4) Go straight downhill on foot rather than ski and look for possible escape routes.

(5) Go straight down, do not traverse.

(6) If possible cross as high as possible on concave slopes.

(7) Cross one at a time and if one crosses safely, it does not mean that it is safe passage for the rest. If possible, belay everyone across.

b. Actions if Caught.

(1) Attempt to remove skis or snowshoes.

(2) Assess best line of escape.

(3) Delay your departure, i.e., let as much of the avalanche pass you as possible.

(4) Try and work to the side. There will be less force of the avalanche at the edge of the flow.

(5) Try to swim out using a double action backstroke or try to roll away at a 45-degree angle.

(6) A supreme effort should be made to get to the surface as the avalanche settles.

(7) Make an air space to breath.

(8) Move to position near the surface if possible.

(9) Establish orientation.

(10) Don't panic.

c. Avalanche Rescue. Statistically, after about 1/2 hour of burial, the chance of survival is approximately 50%. After an hour the chances of survival drop to 20%. Speed is therefore essential for recovering a live victim. Cold and suffocation is the main causes of death.

(1) Make a careful note of where he was last seen and mark the spot. Also mark any position where he reappeared during his movement.

(2) Make a quick visual search of the area, looking for any sign (i.e., avalanche cord, body parts, or equipment).

(3) If nothing is apparent at first then make a quick surface search.

(4) If nothing is found, a more systematic search should be made from the bottom working up.

(5) If you again fail to find anything, your next step is to probe.

(6) Most Likely Spots to Find an Avalanche Victim.

(a) Start at the last seen location and work down the slope. Look for clues of the victim such as skis, clothing, avalanche cord, etc.

(b) At the outsides of bends of the avalanche path where debris accumulates.

(c) Look on the uphill side of obstacles, such as trees and boulders, where debris builds up.

(d) In the run out zone, debris may be very large and hard to search.

(7) Types of Searches. This will depend on manpower available and time.

(a) Hasty search. By far the most important search for backcountry travel. Speed is essential and the determination whether or not to go for help is a difficult one.

(b) Coarse probe. The idea behind this type of probe is to sacrifice some thoroughness for speed.

(c) Fine probe. Takes 4-5 times longer than the coarse probe. Chances are, the victim will not be recovered alive.

7. **ICE HAZARDS.** Frozen waterways (lakes, streams, and bays) can be life threatening obstacles when crossing. Ice is classified in three general types: salt water, fresh water, and land.

a. Fresh Water Ice. Fresh water ice begins to form on lakes and rivers under normal conditions, from 3-5 weeks after the daily temperature drops below 32F.

b. Lake Ice is generally weak in the areas of streams, inlets, springs, or outlets. Decaying vegetation on the bottom of a lake may give off air bubbles, which slow ice formation and create weak ice.

c. River Ice formed by warm weather and wind may create a rough surface, which will remain ruff throughout the winter. This ice is filled with air bubbles.

d. Normally, fresh water does not freeze to a thickness greater than 8 feet in a single season. In lakes, the normal ice depth by late March is between 3 1/2 feet and 6 feet, depending on winter temperatures.

(1) The following conditions will speed up freezing:

(a) Low stable temperatures.

(b) High wind-chill factor.

(c) No snow cover.

(d) No current.

(2) The following conditions will retard freezing:

(a) Fluctuating temperature.

(b) Fast current.

(c) Snow cover.

(d) Salt water and other impurities.

NOTE: The strength of ice depends upon ice structure, purity of water, freezing process, cycles of freezing and thawing, crystal orientation, temperature, ice thickness, snow cover, water current, underside support, and age.

e. Special Considerations.

(1) Immediately adjacent to the shore, the ice formation is thin and weak and more likely to develop cracks than ice in the center of a frozen stream. Depending upon the gradient of the riverbed and the thickness of the ice near the shore, it is generally safer to maintain a route near the shore if the ice rests upon the river bottom.

(2) Where an under-ice current of water flows under a large ice area, the ice in contact with the current is subject to a greater variation in temperature over a given time, and therefore thicker than the ice in adjacent areas.

(3) Shallow water ice is usually thinner than deep water ice.

(4) Good quality ice is clear and free from bubbles and cracks. In a body of water containing clear and cloudy ice. The clear ice will frequently be thinner then the cloudy ice.

(5) Lakes containing a great deal of vegetation whose decomposition retards freezing, results in weak ice.

(6) Flooded snow when frozen produces "slush ice" which is white and may contain air bubbles. Slush ice has a load carrying capacity approximately 1/4 less than that of prime natural ice.

(7) Ice that remains unsupported after a drop in the water beneath it has little strength. Reservoirs and lakes with runoffs are examples.

8. **ICE CROSSING**.

a. Safety Precautions. There are six safety precautions to take prior to crossing an ice-covered body of water.

(1) Loosen bindings on skis or snowshoes, if so equipped.

(2) Remove wrist loops of ski poles, if so equipped. If ski poles are not available, attach a wrist loop to a fixed blade knife (i.e., bayonet) and fasten to the arm.

(3) Clothing should be worn snugly. All ties tied securely (wrist straps, waist straps, collars, trouser cuffs, etc.) This gives buoyancy if break through occurs, and reduces cold shock.

(4) Sling pack and weapons onto one shoulder.

(5) Only expose one man to the danger at a time or until weight factor is determined.

(6) Ropes should belay the first group of individuals, if available.

b. Self-Rescue Techniques. If an individual or group breaks through the ice, carry out the following techniques.

(1) Remove unnecessary gear (packs, weapons, snowshoes, etc.) and attempt to throw them onto the ice.

(2) Use your fixed blade knife or ski pole (if equipped) to drag/push yourself out of the water.

(3) Do not stand up near the hole. Remain flat and continue to push/drag yourself away from the hole until clear of the danger.

(4) **REWARM IMMEDIATELY.** Cold-water immersion will result in shock and hypothermia. Strip all wet clothing off and attempt to rewarm body with a dry sleeping bag or as many fires as possible, surrounding the body.

c. Group-Rescue Techniques. If personnel are available to assist in the rescue, carry out the following techniques.

(1) Do not allow Marines to move near the hole without some type of safety (i.e., rope, human chain).

(2) If rope is available, tie a large fixed loop on the end. Throw the loop to the victim and have him place the loop over the body.

(3) If rope is not available, locate a long stick and create a human chain. With all Marines lying prone, move the chain to as close as possible until the victim can grasp the stick.

(4) If the victim cannot grasp the stick, continue to edge the chain to the hole until the end man can reach the victim by hand.

(5) Once the victim has been recovered, **REWARM IMMEDIATELY**.

REFERENCE:

1. Jill Fredston, Snow Sense, 1994.
2. CRREL Technical Publication, Ice Dynamics MP 1585, 1975.
3. CRREL Technical Publication, Ice Reconnaissance SR 91-30, 1990.

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EVASION PLAN OF ACTION FORMAT

1. Individuals completing EPAs should not une the statement "PER SAR SPINS (Special Instructions) as a substitute for this document. Such a statement fails to provide recovery forces with the information required and provides no concrete data with which to plan a recovery operation.

2. EPAs should contain the following minimum information. Inclusion of this prescribed information into one document enhances operational effectiveness and precludes the possibility that critical information might not be available in a time-sensitive situation. These documents must be classified to at least the level of the operation order for the mission they support. Paragraphs must be individually classified to the appropriate level.

    a. Indentification

        (1) Name and rank of each individual.

        (2) Mission number, aircraft, or call sign.

    b. Planned Route of Flight or Travel.

        (1) Route points must be describe in the EPA for both ingress and egress.

        (2) Describe inflight emergency plans for each leg of the mission.

    c. Immediate Evasion Actions and/or Intentions for the First 48 hours, Uninjured (for example):

        (1) Hide near aircraft site or area of separation from unit (distance and heading).

        (2) Evade alone or link-up with others at rally point.

        (3) Travel plans (distance, duration or time, speed, and other such details).

        (4) Intended actions and/or length of stay at initial hiding location.

    d. Immediate Evasion Actions and/or Intentions, If Injured.

        (1) Provide hiding intentions if injured.

        (2) Provide evasion intentions if injured.

        (3) Provide travel intentions if injured.

(4) Provide intended actions at hiding locations if injured.

e. Extended Evasion Actions and/or Intentions After 48 hours.

(1) Destination (SAFE, mountain range, coast, border, FEBA).

(2) Travel routes, plans, and/or techniques (either written and/or sketched).

(3) Actions and/or intentions at potential contact or recovery locations.

(4) Recovery/contact point signals, signs, and/or procedures (written out and/or sketched).

(5) Back-up plans, if any, for the above.

3. The following information should be completed by appropriate communications and/or signal, intelligence personnel and attached to the EPA.

a. Communications and Authentication.

(1) Codewords.

(2) Available communications and signaling devices.

(3) Primary communication schedule, procedures, and/or frequencies (first 48 hours and after 48 hours).

(4) Back-up communication schedule, procedures, and/or frequencies.

b. In addition to the above minimum required information, units may wish to include the following optional information:

(1) Weapons and ammunition carried.

(2) Personal evasion kit items.

(3) Listing of issue survival and evasion kit items.

(4) Mission evasion preparation checklist

(5) Signature of reviewing official.

PME VIDEO GUIDED DISCUSSION

"THE EDGE"

BREAK AT THE FLIGHT TO FIND THE INDIAN

1. Discuss the bear threat, emphasize bivouac routine and food storage.
2. Discuss amount of available sunlight in northern latitudes (winter/summer).
3. Discuss book knowledge vs. skills.
4. Explain the Taiga Ecosystem and where it ranges in the world.

BREAK AFTER THE FIRST DAY

1. Discuss their "mind-set/attitude" at the cabin - childish & unprepared with no survival kit.
2. What should their first concern be after the cold water immersion?
3. "Any one got matches?" - How did they stay dry?
4. What tinder did they have for their fire? Witches hair should have been used.
5. What priorities of work did they accomplish?

BREAK AT THE NIGHT FIRE

1. "Die of shame", what natural reaction to stress does it relate to?
2. Watch method/improvised compass - problems for survival navigation.
3. Why was it a good decision to travel?
4. What should they have done prior to traveling?
5. Group survival - Point out how as a group, the weak became strong when they formulated a plan together & how the weak became strong when tasked.

BREAK AT THE HELO FLYING OVER

1. Discuss the thatching job on their shelter.

2. Discuss commitment/courage about the bloody bandages. “What difference does it make?”

3. Discuss snow storms in mountains at any time.

4. Discuss survival signaling - be prepared.

BREAK AFTER THE BEAR KILL

1. Discuss how they passed up enormous food sources.
   -Reindeer moss
   -Fish

2. Discuss how they should be thinking of long term survival prior to the onset of winter.

3. Point out how bears run straight through the woods.

4. Point out when a bear will charge: pawing back & forth with head swaying side to side.

5. Point out that man will not out run a bear.

6. Explain that a mauled survivor was only disciplined by the bear.

DISCUSS AT THE END OF THE MOVIE

1. How tools became important.

2. The feasibility of digging large pit traps.

3. How Anthony Hopkins sat & thought prior to making a decision - “Undue haste makes waste”.

4. How realistic the amount of bough would create the amount of smoke generated.

5. Discuss finally how knowledge comes first, but knowledge without skills is useless!

SURVIVAL QUICK REFERENCE CHECKLIST

S - Size up the situation, surroundings, physical condition, & equipment.
U - Undue haste makes waste.
R - Remember where you are.
V - Vanquish fear and panic.
I - Improvise & Improve.
V - Value living.
A - Act like the natives.
L - Live by your wits, *but for now*, Learn Basic Skills.

1. IMMEDIATE ACTIONS

a. Assess immediate situation...**THINK BEFORE YOU ACT!**
b. Take action to protect yourself from NBC hazards.
c. Seek concealment.
d. Assess medical condition; treat as necessary.
e. Sanitize uniform of potentially compromising information.
f. Sanitize area, hide equipment you are leaving.
g. Apply camouflage.
h. Move away from initial site using patrolling techniques.
I. Use terrain to advantage; cover, concealment, and communication advantage.
j. Find a rally point with the following:
    -Cover and concealment.
    -Safe distance from enemy positions and Lines of Communication (LOCs).
    -Multiple avenues of concealed escape routes.
    -Has locations for LPs and OPs.
    -Protection from the elements.
    -Near a reliable water and fuel source.
    -Location for possible communication/signaling opportunities.

2. RALLY POINT

a. Establish security: treat injuries, inventory equipment, improve camouflage.
b. Assess Commanders Intent IAW ability to execute mission.
c. Determine level of combat effectiveness.
d. Develop a course of action using METT-TSL; establish priorities.
e. Execute course of action...stay flexible!

3. MOVEMENT

a. Travel slowly and deliberately.
b. Do not leave evidence of travel, use noise and light discipline.
c. Stay away from LOCs.
d. Use standard patrolling techniques.

4. CHANCE CONTACT

a. Only engage the enemy with reasonable chance of success.
b. Use METT-TSL for all engagements.
c. Break contact for all unfavorable engagements.

5. COMMUNICATION AND SIGNALING

a. Communicate per theater communication procedures, particularly when considering transmitting in the "blind".
b. Be prepared to use signaling devices on short notice.
c. Execute signaling per mission order.

6. RECOVERY OPERATIONS

a. Select site(s) IAW mission order.
b. Ensure site is free of hazards and enemy.
c. Select best area for communications and signaling devices.
d. Observe site for proximity to enemy activity and LOCs.
e. Follow recovery force instructions.

ANIMAL HABITS

(1) Coyote and Wolf. Coyotes and wolves often run in family groups, especially in the early part of the season. When a littermate is caught, normally other coyotes will return to the set site, so reset traps in the same area. They are inquisitive, so you want them to smell and see. Generally they run 3-25 square mile territories, even larger during periods of rough weather. They will move and congregate around a good food source until it has been eaten. Some years, natural food abundance will have them working one species and showing little interest for other foods and baits. Look at fresh scat and select baits on what they are eating. Coyotes are found at every elevation and habitat type in North America while wolves are restricted to northwestern states. At higher elevations during deep winter snows, coyotes will move to lower elevations with the deer, elk, and livestock, although some will tough it out in the deep snow.

(2) Fox. Gray, Red, Prairie Swift, and Desert Kit foxes are found throughout the U.S. Grays are found in pinion-juniper, cedar, oak brush, canyon bottoms and hogbacks, cottonwood draws and edges where these meet. The Red Fox is found in irrigated agricultural lands along the bases of mountain ranges and prairie rivers, in the high mountain parks and alpine. The Prairie Swift Fox is found in the prairie states of this country. The desert kit fox is found in the southwestern corner states. Both of these species are vary curious. Fox habits are very much like the coyote.

(3) Bobcat and Lynx. Bobcats are generally found in the west while Lynx are found in the northwestern states. They compete with coyotes and sometimes are preyed on by coyotes. Their territory is generally two square miles. They den in rock caves, deadfalls, hollow trees and logs. They are sight hunters and use their eyes and ears more than the sense of smell. They prefer to kill their own food and avoid rotten carrion. Bobcat can be “pulled” to an area by curiosity lures. They often avoid large open space.

(4) Raccoon and Opossum. They are located throughout the U.S. They like a combination of water, old mature trees, buildings and junk piles, and a consistent food supply like grain or prepared feed.

(5) Ring-tailed Cat. They inhabit watercourses where rocky canyons or broken rock, erosion holes and rough terrain occurs. They are found in the western states. Old timers talk of ringtails being fairly abundant prior to the expansion of the raccoon range and densities during and after WWII. It is possible that raccoons have replaced the ringtail in much of its former habitat.

(6) Badger. They are found from above the timberline to the lowest elevation in the west. They apparently do not tolerate high densities and generally there are only 3-4 per square mile while running 1-3 square miles. They prefer rodents but take carrion, fruit, insects, roots and grain. They hole up for long periods during extremely cold weather, moving just before and after severe weather systems. These animals can be tracked to dens and snared in the den. They often inhabit prairie dog towns.

(7) Skunk. Three species are found in the west: striped, spotted, and hognose. Skunks are located just about everywhere. Their musk is a prized ingredient for lures.

(8) Weasel. Two species of weasels occur in most of the west: the ermine or short-tailed, and the long-tailed. They prefer meat and blood, although sometimes they are caught on peanut butter. Their body shape is adapted for living and pursuing their prey on the prey's own territory, burrows, tunnels, and runways. They have ferocious appetites and will tackle grouse, rabbits, ducks, and squirrels. They are inquisitive and can't pass up examining cavities, knot holes, and burrow entrances.

(9) Marten. Marten are found in the upper montane and subalpine zones above 8,000 feet. They generally don't venture far from the escape cover of trees. They live on squirrels, rabbits, voles, deer mice, grouse and other small birds and mammals. There may be as many as 3-5 per square mile. They like fresh kidney, heart, liver, and spleen for baits.

(10) Mink. They are found in suitable water habitat or marshy ground with good bank development and undisturbed wetlands vegetation. They feed on fish, crustaceans, clams, and small mammals and birds. They will general travel along the stream bank.

(11) Beaver. They are found in almost all water with cottonwood, aspen, or willow trees. Peak activity of beaver is from September to freeze-up when they are repairing dams, lodges and building food caches. There will usually be slides from the water to cutting areas of trees. Their castor is an excellent additive to lure.

(12) Muskrat. They are found in springs, dugouts, dams, and permanent pools on intermittent streams, rivers, and irrigation ditches, mountain lakes and beaver ponds. Their dens are usually below the water line and into the bank.

(13) Black Bear. They are found throughout North America. The female generally has one or two cubs during the winter hibernation. Survival of the cubs is good since they benefit from at least a year of parental

care. Sows have litters every other year and will not produce cubs until 2 or 3 years of age. They are omnivorous in their feeding, taking what is available such as insects, rodents, berries, roots, fish, and carrion. They are inquisitive. Their color can range from black, brown, cinnamon, to golden.

(14) Mountain Lion. In colonial America the mountain lion, painter, panther, catamount, or cougar was found throughout the U.S. Much of their disappearance was due to the clearing of forests and land-use changes as development progressed. They have litters of 1-6 kittens, averaging 2-3 normally. These are generally born in late winter and early spring. Dens are generally caves in rocky country, hollow logs, windfall trees and various cavities that provide protection from weather. Males can weigh up to 276 pounds and 175 pounds for females. They have tremendous strength with reports of mature lions carrying full-grown deer up cliffs, moving 650-pound cattle, and carrying adult elk for long distances. They prefer to kill their own food and disdain soured and decaying carrion. Kills are deep scratches and gouges on the neck and shoulders, bites and scratches around the neck, face and eyes. The skin is peeled back and the blood rich liver, spleen, kidneys, and lungs are eaten first. The muscle tissue is gnawed from the bones. The lion will normally scratch dirt and plant material over the kill, leave it and return for a future meal.

(15) Rabbits and Hares. There are numerous species located throughout North America with the Cottontail, Black-Tailed Jack, and the white-tailed Jack being located in our training area. During winter months, they will feed on aspen and willow twigs.

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TACTICAL CONSIDERATIONS

If the need arises to implement survival skills in a semi-permissive or non-permissive environment the Marine must be able to utilize basic skills, as referenced in the Marine Battle Skills Handbook Pvt – Lcpl, in order to avoid making contact with hostile personnel. Unfortunately, the enemy will not consider your **MOS** when deciding whether or not you should be **captured** or **killed**. It is imperative that every Marine live up to statement – **"every Marine is a basic rifleman."**

To discuss every possible survival scenario and enemy situation would be pointless. The following outline is to be utilized as a guide. Common sense and survival skills, along with these considerations, will increase your chances of avoiding capture or possible death.

A. Apply the key word survival (ICBT – 20.01) (PVTX.14.16)

1. **Size up the situation:**
   - **Mission**
     What was the mission?
     Can the mission still be accomplished?
   - **Enemy**
     What is the enemy situation?
   - **Troops and Fire Support available**
     Do you have communications with higher?
     Is anyone injured? How will they be transported?
     How will you communicate with other Marines in your group?
     Arm and Hand signals?
   - **Terrain and Weather**
     Do you have a map?
     Does the terrain offer cover and concealment?
     Where is the water?
     Do you have protection from the elements?
     Is it advantageous to move in current weather?
     Will you move in daytime or evening temperatures?
     How much illumination is available at night?
   - **Time, Space, and Logistics**
     Is it day or night?
     Time Distance Formula
     What kind of supplies and equipment are available?

2. **Undue haste makes waste:**
   - Should you stay or move from your current position.

- "Slow is Smooth – Smooth is Fast" i.e. Is there a need to run to the SAFE or should the requirements of survival be implemented in route? Security is paramount -is it being sacrificed for speed?

3. **Remember where you are:**
   - Are you in a non-permissive environment?
   - What is the terrain like?
   - Can you utilize land navigation skills?

4. **Vanquish fear and panic:**
   - Are good decisions being made?
   - Is the group completely lost and leaderless?
   - **BAMCIS**

5. **Improvise and improve:**
   - Do you have your survival kit?
   - Are litters available or do you have to improvise?
   - Do you have the resources to obtain food and water?
   - Will your supplies and equipment protect you from the elements?
   - Will your supplies and equipment protect you from the enemy?

6. **Value living:**
   - Do you want to lay on your back and put your legs in the air like a dead cockroach?

7. **Act like the natives:**
   - Observe native habits.

8. **Live by your wits, but for now learn basic skills:**
   - Utilize common sense and basic Marine Corps training.
   - Practice skills learned at MWTC.
   - **Prior planning prevents poor performance.**
   - Establish E and R plan, brief personnel of contingencies.

B. **Additional Individual Training Standards**:
- Employ signaling devices **(ICBT – 20.03)**
- Construct and maintain a fire **(ICBT – 20.04**)
  - What is the tactical situation?
- Prepare a survival kit **(ICBT 20.05) (PVTX.14.15**)
- Maintain the M16A2 service rifle. **(PVTX.11.1)**
- Prepare individual equipment for tactical operations. **(PVTX.14.1)**
- Camouflage self and individual equipment. **(PVTX.14.7)**
- Transport casualties using manual carries and improvised stretchers. **(PVTX.17.4)**
- Maintain physical fitness. **(PVTX.20.1)**
- Perform individual movement. **(PVTX.14.2)**
- Participate in a security patrol. **(PVTX.13.1)**

        - Arm and hand signals.
        - Challenge and pass / near and far recognition.
        - Rally points.
        - Actions on enemy contact
    - Security halts.
    - Reconnaissance of objectives.
    - 5 Point Contingency Plan. (GOTWA)
        - Going (where)
        - Others (who is going with you)
        - Time away.
        - What happens (you and them)
        - Actions taken on enemy contact (you and them)
- React to enemy indirect fire. **(PVTX.14.3)**
- React to enemy direct fire. **(PVTX.20.1)**

C. Additional Considerations:

When sizing up the situation you will determine whether the Mission or Cmdr's Intent can be accomplished. Obviously, every effort must be made to accomplish the mission. If it can not be accomplished a separate mission order must be established for the group. (i.e. At 0900 the group will implement the requirements for survival in order to move to the SAFE for recovery.)

In order to tactically move and occupy the SAFE, the group must be task organized into teams. The teams are assigned additional tasks. Team tasks will usually be accomplished during occupation of the patrol base. In addition, individuals within the group are assigned tasks.

1. Teams:

- Security. All patrol members should be assigned sectors of fire to include air sentry.
- Reconnaissance.
- Assault. (may not be implemented)
- Support. (may not be implemented)

2. Team Tasks:

- Water procurement.
- Food gathering.
- Wood gathering. (construction materials, signal, and fire wood.)
- Shelter construction.
- Pathguards.
- Signaling

3. Individual Tasks:

- Point man.
- Navigator.
- Patrol leader and assistant.

- Flank (left and right) security.
- Two pace men.
- Tail end charlie.

In a survival situation it is probably wiser to occupy the patrol base through reconnaissance instead of by force. Upon initial occupation the acronym SAFE (Security, Automatic weapons, Fields of fire, Entrenchment) must be enforced. The patrol base should only be entered (or exited) from one location. Communication within the group is essential. Everyone must be well informed. (i.e. current plans, alternate patrol bases or rally points, how many Marines have departed the patrol base and when are they expected to return, current challenge and pass, and near and far recognition signals.) No Marine will exercise their judgement and leave the patrol base or perform a task without permission from the patrol leader.

The patrol base is not a place for lollygagging. It is a place where noise and light discipline is enforced and security is maintained continuously. Priorities of work will be established after occupation. (i.e. weapon maintenance, hygiene, chow, and rest plans) Security or reconnaissance teams can be sent out to determine enemy threat or gather information for route selection. These patrols can also be tasked with gathering firewood or some other routine task. However, security must be maintained while the firewood is being collected.

Since you are probably evading the enemy, activity in and around the patrol base must be limited. Occupation of the patrol base must not exceed 24 hours. Depending on the tactical situation the use of fire may or may not be appropriate.

D. Conclusion:

The above information servers as a guideline. Survival is a thinking person's challenge between life and death. As the situation changes a Marine must adapt, size up the situation, and implement a new plan in order to survive. If you are lacking in any of the Individual Training Standards it is your responsible to take corrective action. **Remember that every Marine is a basic rifleman.**

UNITED STATES MARINE CORPS
Mountain Warfare Training Center
Bridgeport, California 93517-5001

WINTER MOUNTAIN SURVIVAL COURSE

PERFORMANCE EVALUATION RECAP SHEET

1. The student must satisfactorily achieve an 80% or higher grade on either the written test or the written retest.

2. The student must satisfactorily master 10 out of the 12 performance evaluation tasks.

3. A breach of integrity, conduct unbecoming of a student or the inability to abide by Survival course guidelines, will result in the immediate dismissal from the Mountain Survival Course.

4. All of the above must be accomplished prior to successful graduation from the Mountain Survival Course.

5. Failure to accomplish any one these will result in a Proficiency Board, which may result in dismissal from the course.

6. There will be no talking to any student during isolation unless an emergency. No student will come with in 50 meters of another student.

PERFORMANCE TASK M--N/M REMARKS

All criteria listed below each task, must be accomplished in order to master those tasks.

1. SURVIVAL KIT (MSV.2.2) M / NM
   Fire starting items
   Water procurement items
   Food procurement items
   Signaling items
   First Aid items
   Shelter items

2. SURVIVAL NAVIGATION (MSV.2.7) M / NM
   Can find cardinal directions
   Prepares and maintains a log book
   Uses steering marks
   Appropriate place

3. BOW & DRILL (MSV.2.13a) M / NM
   Bow
   Drill
   Socket
   Fire Board
   Ember Patch
   Birds Nest
   Kindling
   Fuel Wood

4. SURVIVAL SHELTERS (MSV.2.4) M / NM
   Protection from the elements
   Heat retention
   Ventilation
   Drying facility
   Free from hazards
   Shelter stable

5. REQUIREMENTS FOR SURVIVAL (MSV.2.1) M / NM
   1st 24Hrs.
   Shelter
   Fire
   Water
   Signaling

   2nd 24Hrs.
   Tools & Weapons
   Traps & Snares
   Path guards

6. IMPROVISED SIGNAL DEVICE (MSVX.2.6) M / NM
   Smoke Generator
   Appropriate Size
   Tinder
   Kindling
   Placement
   Aflame within 90 seconds

   International Symbol
   Shadows
   Size
   Placement
   Contrast

7. TOOLS & WEAPONS (MSV.2.11) M / NM

Bowl

Wood split
Bark stripped
Coal burned
4inch deep, 4 inch diameter
Does not leak

Simple Club

Hardwood used
Bark stripped
Fire hardened (if required)
Club functional
Rounded ends

8. TOOL OR WEAPON (MSV.2.11) M / NM

Hardwood used
Bark stripped
Fire hardened (if required)
Functional able
One of the three following will be made: Ice spud, Ice skimmer, Slingshot

9. FISH & GAME (MSV.2.10) M / NM

Dress and/or skin game
Prepared game for consumption
Consumed game
Hide fleshed, brained, and smoked
Hide sewn and suitable for intended uses

10. TRAPS & SNARES (MSV.2.9) M / NM

Employment tech. appropriate for intended animal
a. Location
b. Presentation
c. Construction

Loop size and ground clearance correct
Bait used
Split stick if required

11. EXPIDIENT SNOWSHOE (WSVX) M / NM

Properly constructed
Properly attached
Execute movement tech.
Binding does not fail (3times)
Snowshoe does not break

12. PATHGUARD (MSV.2.9) M / NM
    Likely avenue of approach
    Produces noise
    Concealed
    Appropriate tactical distance from the shelter

ARMY, MARINE CORPS, NAVY, AIR FORCE

SURVIVAL, EVASION, AND RECOVERY

MULTISERVICE PROCEDURES FOR SURVIVAL, EVASION, AND RECOVERY

FM 21-76-1
MCRP 3-02H
NWP 3-50.3
AFTTP(I) 3-2.26

JUNE 1999

AIR LAND SEA APPLICATION CENTER

DISTRIBUTION RESTRICTION:
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MULTISERVICE TACTICS, TECHNIQUES, AND PROCEDURES

QUICK REFERENCE CHECKLIST

Decide to Survive!

S - **S**ize up the situation, surroundings, physical condition, equipment.
U - **U**se all your senses
R - **R**emember where you are.
V - **V**anquish fear and panic.
I - **I**mprovise and improve.
V - **V**alue living.
A - **A**ct like the natives.
L - **L**ive by your wits.

1. Immediate Actions

a. Assess immediate situation. ***THINK BEFORE YOU ACT!***
b. Take action to protect yourself from nuclear, biological, or chemical hazards (Chapter IX).
c. Seek a concealed site.
d. Assess medical condition; treat as necessary (Chapter V).
e. Sanitize uniform of potentially compromising information.
f. Sanitize area; hide equipment you are leaving.
g. Apply personal camouflage.
h. Move away from concealed site, zigzag pattern recommended.
i. Use terrain to advantage, communication, and concealment.
j. Find a hole-up site.

2. Hole-Up-Site (Chapter I)

a. Reassess situation; treat injuries, then inventory equipment.
b. Review plan of action; establish priorities (Chapter VI).
c. Determine current location.
d. Improve camouflage.
e. Focus thoughts on task(s) at hand.
f. Execute plan of action. Stay flexible!

Recommend inclusion of this manual in the aviator's survival vest.

3. Concealment (Chapter I)

a. Select a place of concealment providing—

(1) Adequate concealment, ground and air.

(2) Safe distance from enemy positions and lines of communications (LOC).

(3) Listening and observation points.

(4) Multiple avenues of escape.

(5) Protection from the environment.

(6) Possible communications/signaling opportunities.

b. Stay alert, maintain security.

c. Drink water.

4. Movement (Chapters I and II)

a. Travel slowly and deliberately.

b. ***DO NOT*** leave evidence of travel; use noise and light discipline.

c. Stay away from LOC.

d. Stop, look, listen, and smell; take appropriate action(s).

e. Move from one concealed area to another.

f. Use evasion movement techniques (Chapter I).

5. Communications and Signaling (Chapter III)

a. Communicate as directed in applicable plans/orders, particularly when considering transmitting ***in the blind***.

b. Be prepared to use communications and signaling devices on short notice.

c. Use of communications and signaling devices may compromise position.

6. Recovery (Chapter IV)

a. Select site(s) IAW criteria in theater recovery plans.

b. Ensure site is free of hazards; secure personal gear.

c. Select best area for communications and signaling devices.

d. Observe site for proximity to enemy activity and LOC.

e. Follow recovery force instructions.

FM 21-76-1
MCRP 3-02H
NWP 3-50.3
AFTTP(I) 3-2.26

FM 21-76-1	U.S. Army Training and Doctrine Command Fort Monroe, Virginia
MCRP 3-02H	Marine Corps Combat Development Command Quantico, Virginia
NWP 3-50.3	Navy Warfare Development Command Newport, Rhode Island
AFTTP(I) 3-2.26	Headquarters Air Force Doctrine Center Maxwell Air Force Base, Alabama

29 JUNE 1999

Survival, Evasion, and Recovery

Multiservice Procedures for
Survival, Evasion, and Recovery

Note: This *UNCLASSIFIED* publication is designed to provide Service members quick-reference survival, evasion, and recovery information. See Appendix B for the scope, purpose, application, implementation plan, and user information.

TABLE OF CONTENTS

Page

CHAPTER I EVASION

1. Planning I-1
2. Camouflage I-1
3. Shelters I-3
4. Movement I-3

CHAPTER II NAVIGATION

1. Stay or Move Considerations II-1
2. Navigation and Position Determination II-1
3. Travel Considerations II-10
4. River Travel II-10
5. Ice and Snow Travel II-11
6. Mountain Hazards II-12
7. Summer Hazards II-12
8. Dry Climates II-12

9. Tropical Climates II-13
10. Open Seas II-13
CHAPTER III RADIO COMMUNICATIONS AND SIGNALING
1. Radio Communications (Voice and Data) III-1
2. Signaling III-2
CHAPTER IV RECOVERY
1. Responsibilities IV-1
2. Site Selection IV-1
3. Site Preparation IV-1
4. Recovery Procedures IV-1
CHAPTER V MEDICAL
1. Immediate First Aid Actions V-1
2. Common Injuries and Illnesses V-9
3. Plant Medicine V-15
4. Health and Hygiene V-18
6. Rules for Avoiding Illness V-18
CHAPTER VI PERSONAL PROTECTION
1. Priorities VI-1
2. Care and Use of Clothing VI-1
3. Other Protective Equipment VI-2
4. Shelters VI-3
5. Fires VI-8
CHAPTER VII WATER
1. Water Requirements VII-1
2. Water Procurement VII-1
3. Water Preparation and Storage VII-7
CHAPTER VIII FOOD
1. Food Procurement VIII-1
2. Food Preparation VIII-9
3. Food Preservation VIII-11
CHAPTER IX INDUCED CONDITIONS
1. Nuclear Conditions IX-1
2. Biological Conditions IX-6
3. Chemical Conditions IX-7
APPENDIX A THE WILL TO SURVIVE A-1
APPENDIX B PUBLICATION INFORMATION B-2

THE CODE OF CONDUCT

ARTICLE I

I am an American, fighting in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

ARTICLE II

I will never surrender of my own free will. If in command, I will never surrender the members of my command while they still have the means to resist.

ARTICLE III

If I am captured, I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy.

ARTICLE IV

If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me and will back them up in every way.

ARTICLE V

When questioned, should I become a prisoner of war, I am required to give name, rank, service number and date of birth. I will evade answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country and its allies or harmful to their cause.

ARTICLE VI

I will never forget that I am an American, fighting for freedom, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

Chapter I

EVASION

1. Planning

a. Review the quick reference checklist on the inside cover.
b. Guidelines for successful evasion include—
   (1) Keeping a positive attitude.
   (2) Using established procedures.
   (3) Following your evasion plan of action.
   (4) Being patient.
   (5) Drinking water (***DO NOT*** eat food without water).
   (6) Conserving strength for critical periods.
   (7) Resting and sleeping as much as possible.
   (8) Staying out of sight.
c. The following odors stand out and may give an evader away:
   (1) Scented soaps and shampoos.
   (2) Shaving cream, after-shave lotion, or other cosmetics.
   (3) Insect repellent (camouflage stick is least scented).
   (4) Gum and candy (smell is strong or sweet).
   (5) Tobacco (odor is unmistakable).
d. Where to go (initiate evasion plan of action):
   (1) Near a suitable area for recovery.
   (2) Selected area for evasion.
   (3) Neutral or friendly country or area.
   (4) Designated area for recovery.

2. Camouflage

a. Basic principles:
   (1) Disturb the area as little as possible.
   (2) Avoid activity that reveals movement to the enemy.
   (3) Apply personal camouflage.
b. Camouflage patterns **(Figure I-1)**:
   (1) Blotch pattern.
      (a) Temperate deciduous (leaf shedding) areas.
      (b) Desert areas (barren).
      (c) Snow (barren).
   (2) Slash pattern.
      (a) Coniferous areas (broad slashes).

(b) Jungle areas (broad slashes).
(c) Grass (narrow slashes).

(3) Combination. May use blotched and slash together.

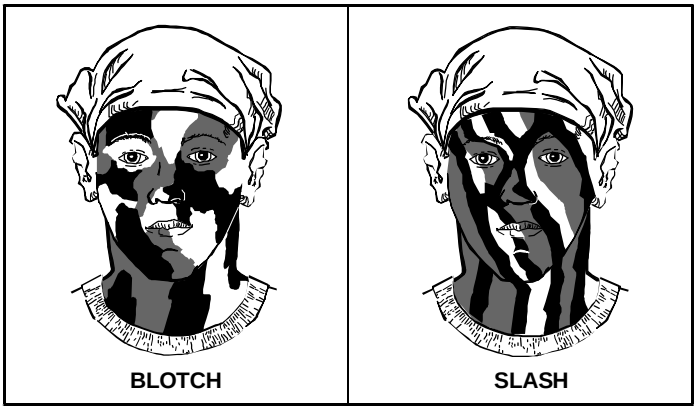

Figure I-1. Camouflage Patterns

c. Personal camouflage application follows:

(1) Face. Use dark colors on high spots and light colors on any remaining exposed areas. Use a hat, netting, or mask if available.

(2) Ears. The insides and the backs should have **2** colors to break up outlines.

(3) Head, neck, hands, and the under chin. Use scarf, collar, vegetation, netting, or coloration methods.

(4) Light colored hair. Give special attention to conceal with a scarf or mosquito head net.

d. Position and movement camouflage follows:

(1) Avoid unnecessary movement.

(2) Take advantage of natural concealment:

(a) Cut foliage fades and wilts, change regularly.

(b) Change camouflage depending on the surroundings.

(c) ***DO NOT*** select vegetation from same source.

(d) Use stains from grasses, berries, dirt, and charcoal.

(3) ***DO NOT*** over camouflage.

(4) Remember when using shadows, they shift with the sun.

(5) Never expose shiny objects (like a watch, glasses, or pens).

(6) Ensure watch alarms and hourly chimes are turned off.

(7) Remove unit patches, name tags, rank insignia, etc.

(8) Break up the outline of the body, ***"V"*** of crotch/armpits.

(9) Conduct observation from a prone and concealed position.

3. Shelters

a. Use camouflage and concealment.

b. Locate carefully—easy to remember acronym: ***BLISS***.

B - Blend
L - Low silhouette
I - Irregular shape
S - Small
S - Secluded location

(1) Choose an area—

(a) Least likely to be searched (drainages, rough terrain, etc.) and blends with the environment.

(b) With escape routes (***DO NOT*** corner yourself).

(c) With observable approaches.

(2) Locate entrances and exits in brush and along ridges, ditches, and rocks to keep from forming paths to site.

(3) Be wary of flash floods in ravines and canyons.

(4) Conceal with minimal to no preparation.

(5) Take the direction finding threat into account before transmitting from shelter.

(6) Ensure overhead concealment.

4. Movement

a. A moving object is easy to spot. If travel is necessary—

(1) Mask with natural cover **(Figure I-2)**.

(2) Use the military crest.

(3) Restrict to periods of low light, bad weather, wind, or reduced enemy activity.

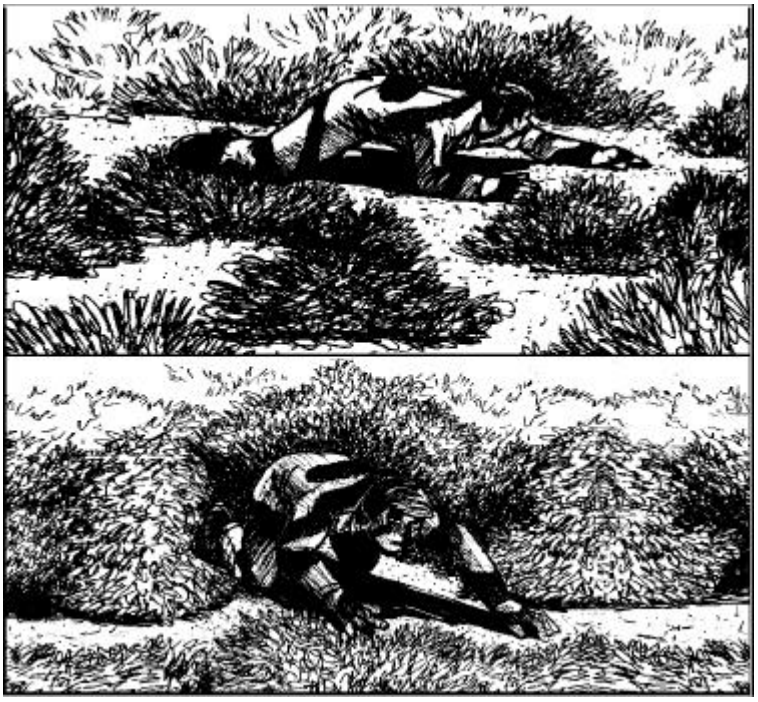

Figure I-2. Ground Movement

(4) Avoid silhouetting **(Figure I-3)**.

(5) At irregular intervals—

(a) ***STOP*** at a point of concealment.

(b) ***LOOK*** for signs of human or animal activity (smoke, tracks, roads, troops, vehicles, aircraft, wire, buildings, etc.). Watch for trip wires or booby traps and avoid leaving evidence of travel. Peripheral vision is more effective for recognizing movement at night and twilight.

(c) ***LISTEN*** for vehicles, troops, aircraft, weapons, animals, etc.

(d) ***SMELL*** for vehicles, troops, animals, fires, etc.

Figure I-3. Avoid Silhouetting

(6) Employ noise discipline; check clothing and equipment for items that could make noise during movement and secure them.

b. Break up the human shape or recognizable lines.

c. Route selection requires detailed planning and special techniques (irregular route/zigzag) to camouflage evidence of travel.

d. Some techniques for concealing evidence of travel follows:

(1) Avoid disturbing the vegetation above knee level.

(2) ***DO NOT*** break branches, leaves, or grass.

(3) Use a walking stick to part vegetation and push it back to its original position.

(4) ***DO NOT*** grab small trees or brush. (This may scuff the bark or create movement that is easily spotted. In snow country, this creates a path of snowless vegetation revealing your route.)

(5) Pick firm footing (carefully place the foot lightly but squarely on the surface to avoid slipping). ***TRY NOT TO***—

(a) Overturn ground cover, rocks, and sticks.

(b) Scuff bark on logs and sticks.

(c) Make noise by breaking sticks. (Cloth wrapped around feet helps muffle this.)

(d) Mangle grass and bushes that normally spring back.

(6) Mask unavoidable tracks in soft footing by—

(a) Placing tracks in the shadows of vegetation, downed logs, and snowdrifts.

(b) Moving before and during precipitation allows tracks to fill in.

(c) Traveling during windy periods.

(d) Taking advantage of solid surfaces (logs, rocks, etc.) leaving less evidence of travel.

(e) Patting out tracks lightly to speed their breakdown or make them look old.

(7) Secure trash or loose equipment—hide or bury discarded items. (Trash or lost equipment identifies who lost it.)

(8) Concentrate on defeating the handler if pursued by dogs.

e. Penetrate obstacles as follows:

(1) Enter deep ditches feet first to avoid injury.

(2) Go around chain-link and wire fences. Go under fence if unavoidable, crossing at damaged areas. ***DO NOT*** touch fence; look for electrical insulators or security devices.

(3) Penetrate rail fences, passing under or between lower rails. If impractical, go over the top, presenting as low a silhouette as possible **(Figure I-4)**.

(4) Cross roads after observation from concealment to determine enemy activity. Cross at points offering concealment such as bushes, shadows, bend in road, etc. Cross in a manner leaving your footprints parallel (cross step sideways) to the road. **(Figure I-5)**

(5) Use same method of observation for railroad tracks that was used for roads. Next, align body parallel to tracks with face down, cross tracks using a semi-pushup motion. Repeat for the second track. **(Figure I-6)**.

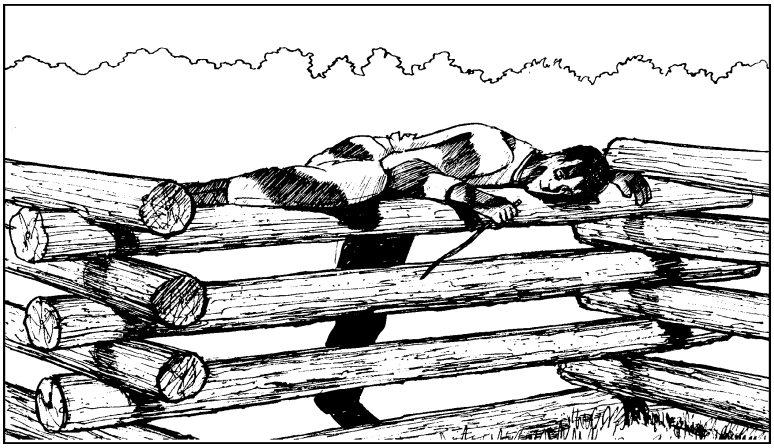

Figure I-4. Rail Fences

Figure I-5. Road Crossing

Figure I-6. Railroad Tracks

WARNING: If 3 rails exist, 1 may be electrified.

Chapter II

NAVIGATION

Assess the threat and apply appropriate evasion principles.

1. Stay or Move Considerations

a. Stay with the vehicle/aircraft in a non-combat environment.

b. Leave only when—

(1) Dictated by the threat.

(2) Are certain of your location, have a known destination, and have the ability to get there.

(3) Can reach water, food, shelter, and/or help.

(4) Convinced rescue is not coming.

c. Consider the following if you decide to travel:

(1) Follow the briefed evasion plan.

(2) Determine which direction to travel and why.

(3) Decide what equipment to take, cache, or destroy.

d. Leave information at your starting point (in a non-combat environment) that includes—

(1) Destination.

(2) Route of travel.

(3) Personal condition.

(4) Supplies available.

e. Consider the following for maps (in a combat environment):

(1) ***DO NOT*** write on the map.

(2) ***DO NOT*** soil the map by touching the destination.

(3) ***DO NOT*** fold in a manner providing travel information.

Note: **These actions may compromise information if captured.**

2. Navigation and Position Determination

a. Determine your general location by—

(1) Developing a working knowledge of the operational area.

(a) Geographic checkpoints.

(b) Man-made checkpoints.

(c) Previous knowledge of operational area.

(2) Using the ***Rate x Time = Distance*** formula.

(3) Using information provided in the map legend.

(4) Using prominent landmarks.

(5) Visualizing map to determine position.

b. Determine cardinal directions (north, south, east, and west) by—

(1) Using compass.

CAUTION: The following methods are ***NOT*** highly accurate and give only general cardinal direction.

(2) Using stick and shadow method to determine a true north-south line **(Figure II-1)**.

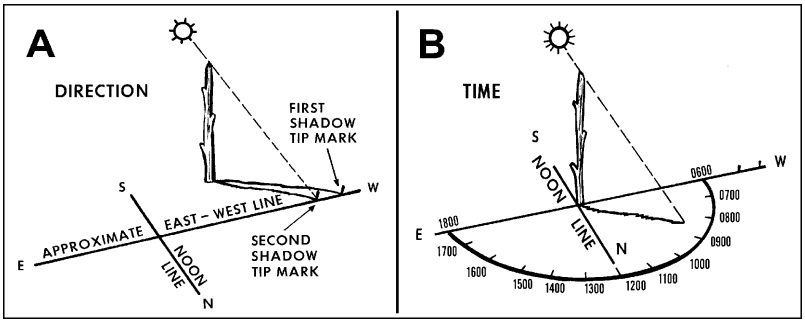

Figure II-1. Stick and Shadow Method

(3) Remembering the sunrise/moonrise is in the east and sunset/moonset is in the west.

(4) Using a wristwatch to determine general cardinal direction **(Figure II-2)**.

(a) Digital watches. Visualize a clock face on the watch.

(b) Northern Hemisphere. Point hour hand at the sun. South is halfway between the hour hand and 12 o'clock position.

(c) Southern Hemisphere. Point the 12 o'clock position on your watch at the sun. North is halfway between the 12 o'clock position and the hour hand.

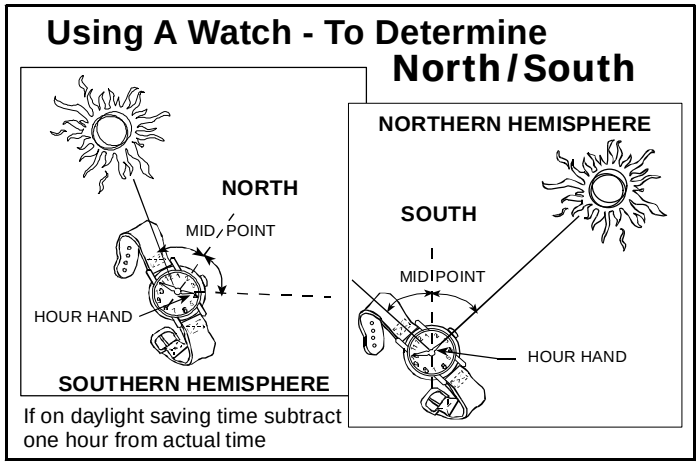

Figure II-2. Direction Using a Watch

(5) Using a pocket navigator **(Figure II-3)**—

(a) Gather the following necessary materials:

- Flat writing material (such as an MRE box).
- 1-2 inch shadow tip device (a twig, nail, or match).
- Pen or pencil.

(b) Start construction at sunup; end construction at sundown. Do the following:

- Attach shadow tip device in center of paper.
- Secure navigator on flat surface (***DO NOT*** move during set up period).
- Mark tip of shadow every 30 minutes annotating the time.
- Connect marks to form an arc.
- Indicate north with a drawn arrow.

Note: The shortest line between base of shadow tip device and curved line is a north-south line.

(c) Do the following during travel:

- Hold navigator so the shadow aligns with mark of present time (drawn arrow now points to true north).

(d) Remember the navigator is current for approximately 1 week.

CAUTION: The Pocket Navigator is ***NOT*** recommended if evading.

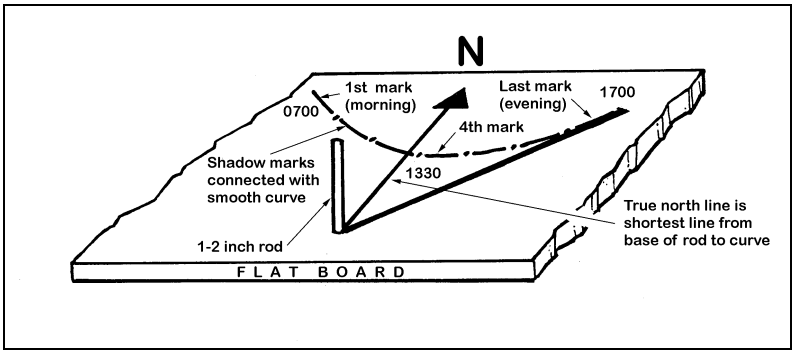

Figure II-3. Pocket Navigator

(6) Using the stars **(Figure II-4)** the—

(a) North Star is used to locate true north-south line.

(b) Southern Cross is used to locate true south-north line.

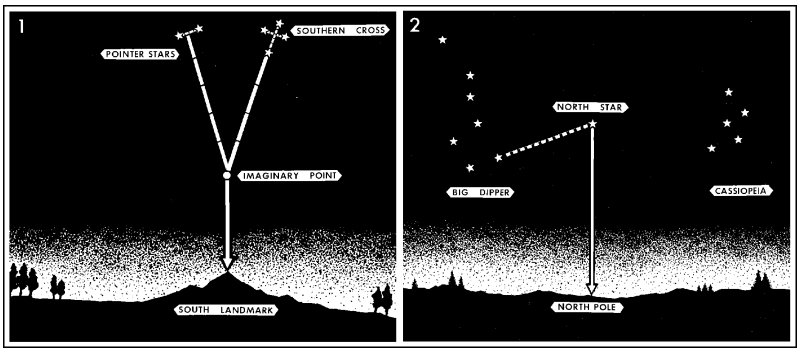

Figure II-4. Stars

c. Orient the map by—

(1) Using a true north-south line **(Figure II-5)**—

(a) Unfold map and place on a firm, flat, level nonmetallic surface.

(b) Align the compass on a true north-south line.

(c) Rotate map and compass until stationary index line aligns with the magnetic variation indicated in marginal information.

- Easterly (subtract variation from 360 degrees).
- Westerly (add variation to 360 degrees).

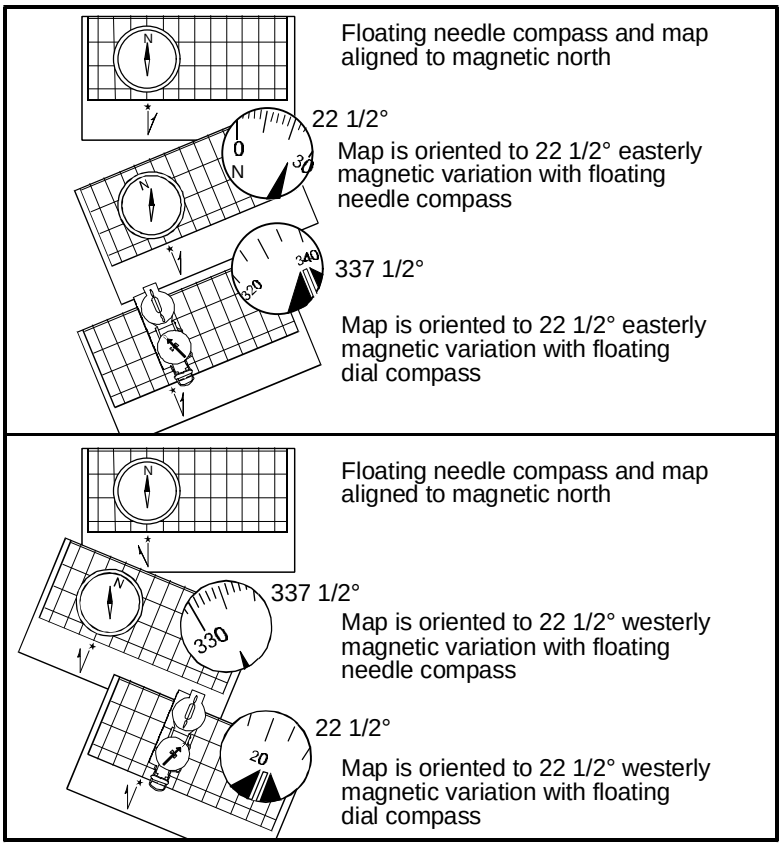
Floating needle compass and map aligned to magnetic north
22 1/2°
Map is oriented to 22 1/2° easterly magnetic variation with floating needle compass
337 1/2°
Map is oriented to 22 1/2° easterly magnetic variation with floating dial compass
Floating needle compass and map aligned to magnetic north
337 1/2°
Map is oriented to 22 1/2° westerly magnetic variation with floating needle compass
22 1/2°
Map is oriented to 22 1/2° westerly magnetic variation with floating dial compass

Figure II-5. Orienting a Map Using a True North-South Line

(2) Using a compass rose **(Figure II-6)**—

(a) Place edge of the lensatic compass on magnetic north line of the compass rose closest to your location.

(b) Rotate map and compass until compass reads 360 degrees.

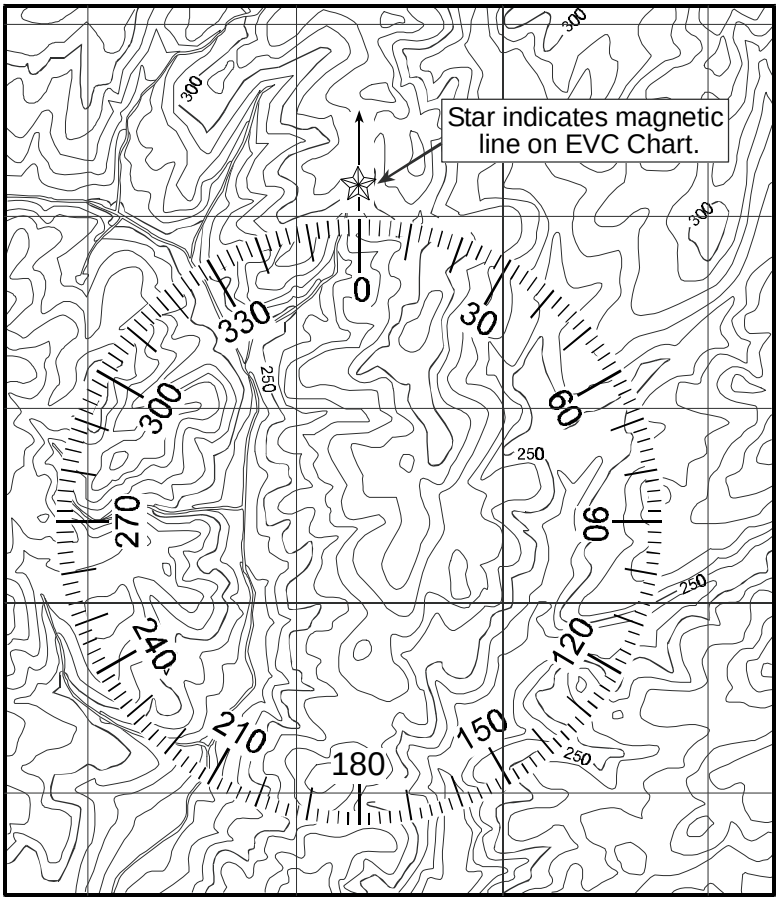

Figure II-6. Map Orientation with Compass Rose

(3) If there is **NO** compass, orient map using cardinal direction obtained by the stick and shadow method or the celestial aids (stars) method.

d. Determine specific location.

(1) Global Positioning System (GPS).

(a) ***DO NOT*** use GPS for primary navigation.

(b) Use GPS to confirm your position ***ONLY***.

(c) Select area providing maximum satellite reception.

(d) Conserve GPS battery life.

(2) Triangulation (resection) with a compass **(Figure II-7)**.

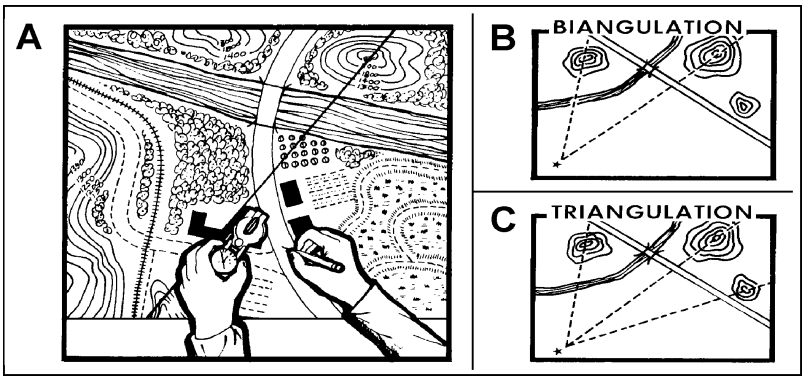

Figure II-7. Triangulation

(a) Try to use **3** or more azimuths.

(b) Positively identify a major land feature and determine a line of position (LOP).

(c) Check map orientation each time compass is used.

(d) Plot the LOP using a thin stick or blade of grass (combat) or pencil line (non-combat).

(e) Repeat steps **(b)** through **(d)** for other LOPs.

e. Use the compass for night navigation by—

(1) Setting up compass for night navigation **(Figure II-8)**.

(2) Aligning north-seeking arrow with luminous line and follow front of compass.

(3) Using point-to-point navigation.

f. Route selection techniques follow:

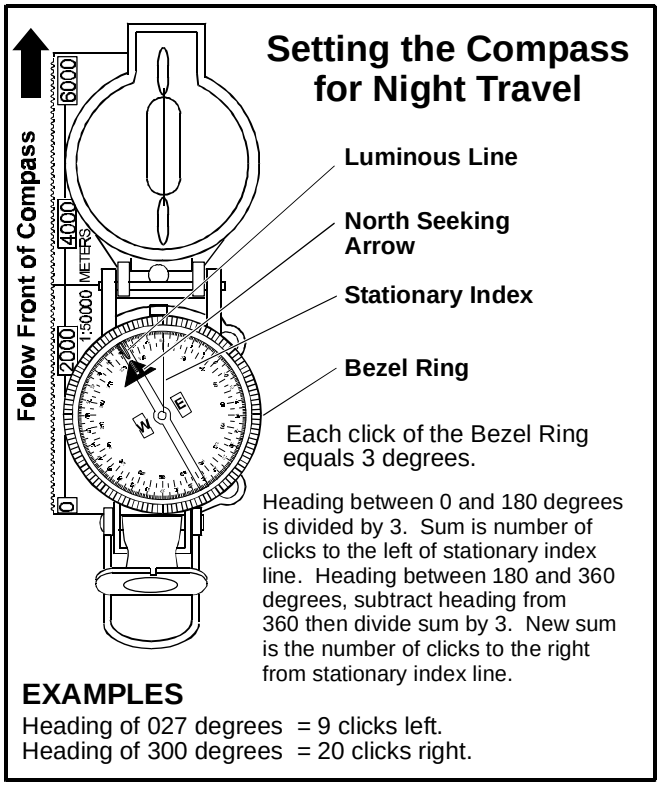
Setting the Compass for Night Travel
Follow Front of Compass
6000
4000
METERS
1:50000
2000
0
Luminous Line
North Seeking Arrow
Stationary Index
Bezel Ring
Each click of the Bezel Ring equals 3 degrees.
Heading between 0 and 180 degrees is divided by 3. Sum is number of clicks to the left of stationary index line. Heading between 180 and 360 degrees, subtract heading from 360 then divide sum by 3. New sum is the number of clicks to the right from stationary index line.
EXAMPLES
Heading of 027 degrees = 9 clicks left.
Heading of 300 degrees = 20 clicks right.

Figure II-8. Compass Night Navigation Setup

(1) Circumnavigation.

(a) Find a prominent landmark on the opposite side of the obstacle.

(b) Contour around obstacle to landmark.

(c) Resume your route of travel.

(2) Dogleg and 90 degree offset **(Figure II-9)**.

(3) Straight-line heading as follows:

(a) Maintain heading until reaching destination.

(b) Measure distance by counting the number of paces in a given course and convert to map units.

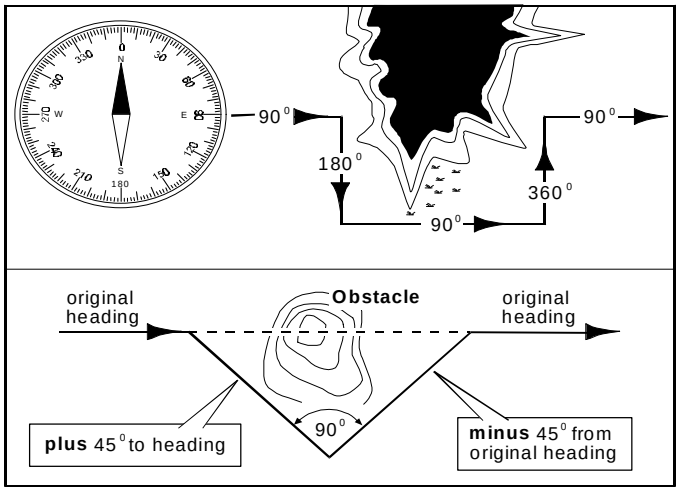

Figure II-9. Dogleg and 90 Degree Offset

•One pace is the distance covered each time the same foot touches the ground.

•Distances measured by paces are approximate (example in open terrain, 900 paces per kilometer [average], or example in rough terrain, 1200 paces per kilometer [average]).

(c) Use pace count in conjunction with terrain evaluation and heading to determine location. An individual's pace varies because of factors such as steep terrain, day/night travel, or injured/uninjured condition. Adjust estimation of distance traveled against these factors to get relative accuracy when using a pace count.

(4) Deliberate offset is—

(a) Used when finding a point on a linear feature (that is, road or river).

(b) Intentionally navigated to left or right of target so you know which way to turn at the linear feature.

(5) Point-to-point is same as straight line.

(a) Pick out landmarks on the heading and walk the trail of least resistance to a point.

(b) On reaching a point, establish another landmark and continue.

3. Travel Considerations

a. Pick the easiest and safest route (non-combat).

b. Maintain a realistic pace; take rest stops when needed.

c. Avoid overdressing and overheating.

d. Consider food and water requirements.

e. Take special care of feet (change socks regularly).

f. Pack equipment to prevent loss, damage, pack imbalance, and personal safety.

g. Go **around** obstacles, not over or through them.

h. Travel on trails whenever possible (non-combat).

i. Travel in forested areas if possible.

j. Avoid creek bottoms and ravines with ***NO*** escape in the event of heavy rains.

k. Consider the following for swamps, lakes, and unfordable rivers:

(1) Circumnavigate swamps, lakes, and bogs if needed.

(2) Travel downstream to find people and slower water.

(3) Travel upstream to find narrower and shallow water.

4. River Travel

River travel may be faster and save energy when hypothermia is not a factor. It may be a primary mode of travel and LOC in a tropical environment **(use with caution if evading)**.

a. Use flotation device (raft, log, bamboo, etc.).

b. Use a pole to move the raft in shallow water.

c. Use an oar in deep water.

d. Stay near inside edge of river bends (current speed is less).

e. Keep near shore.

f. Watch for the following ***DANGERS:***

(1) Snags.

(2) Sweepers (overhanging limbs and trees).

(3) Rapids (***DO NOT*** attempt to shoot the rapids).

(4) Waterfalls.

(5) Hazardous animals.

g. Consider using a flotation device when crossing rivers or large/deep streams.

5. Ice and Snow Travel

Travel should be limited to areas free of hazards.

a. ***DO NOT*** travel in—

(1) Blizzards.

(2) Bitterly cold winds.

(3) Poor visibility.

b. Obstacles to winter travel follow:

(1) Reduced daylight hours (***BE AWARE***).

(2) Deep soft snow (if movement is necessary, make snowshoes **[Figure II-10])**. Travel is easier in early morning or late afternoon near dusk when snow is frozen or crusted.

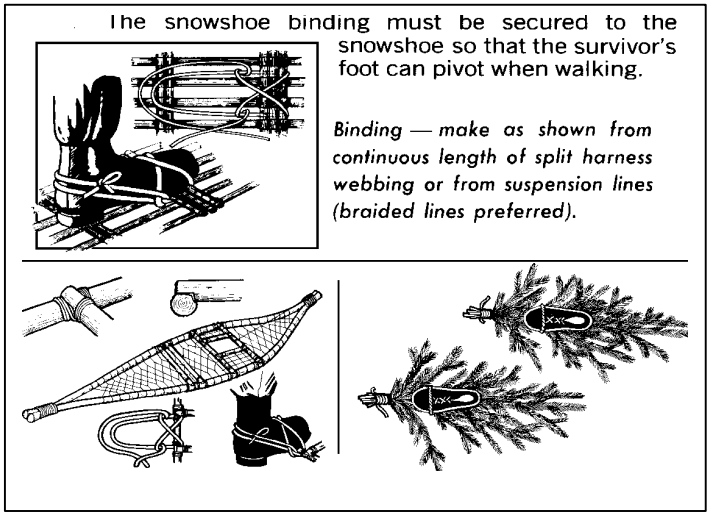
The snowshoe binding must be secured to the snowshoe so that the survivor's foot can pivot when walking.
Binding — make as shown from continuous length of split harness webbing or from suspension lines (braided lines preferred).

Figure II-10. Improvised Snowshoes

(3) Avalanche prone areas to avoid:

(a) Slopes 30-45 degrees or greater.

(b) Trees without uphill branches (identifies prior avalanches).

(c) Heavy snow loading on ridge tops.

(4) If caught in an avalanche, do the following:

(a) Backstroke to decrease burial depth.

(b) Move hand around face to create air pocket as moving snow slows.

(5) Frozen water crossings.

(a) Weak ice should be expected where—

- Rivers are straight.
- Objects protrude through ice.
- Snow banks extend over the ice.
- Rivers or streams come together.
- Water vapor rising indicates open or warm areas.

(b) Air pockets form when a frozen river loses volume.

(c) When crossing frozen water, distribute your weight by laying flat, belly crawling, or using snowshoes.

c. Glacier travel is hazardous and should be avoided.

6. Mountain Hazards

a. Lightning. Avoid ridge tops during thunderstorms.

b. Avalanche. Avoid areas prone to avalanches.

c. Flash floods. Avoid low areas.

7. Summer Hazards (see page II-10; paragraph 3, *Travel Considerations*, items h through k.)

(1) Dense brush.

(a) Travel on trails when possible (non-combat).

(b) Travel in forested areas if possible.

(c) Avoid creek bottoms and ravines with no escape in the event of heavy rains.

(2) Swamps, lakes, and unfordable rivers.

(a) Circumnavigate swamps, lakes, and bogs if needed.

(b) Travel downstream to find people and slower water.

(c) Travel upstream to find narrower and shallow water.

8. Dry Climates

a. ***DO NOT*** travel unless certain of reaching the destination using the water supply available.

b. Travel at dawn or dusk on hot days.

c. Follow the easiest trail possible (non-combat), avoiding—

(1) Deep sandy dune areas.

(2) Rough terrain.

d. In sand dune areas—

(1) Follow hard valley floor between dunes.

(2) Travel on the windward side of dune ridges.

e. If a sandstorm occurs—

(1) Mark your direction of travel.

(2) Sit or lie down in direction of travel.

(3) Try to get to the downwind side of natural shelter.

(4) Cover the mouth and nose with a piece of cloth.

(5) Protect the eyes.

(6) Remain stationary until the storm is over.

9. Tropical Climates

a. Travel only when it is light.

b. Avoid obstacles like thickets and swamps.

c. Part the vegetation to pass through. Avoid grabbing vegetation; it may have spines or thorns (**use gloves** if possible).

d. ***DO NOT*** climb over logs if you can go around them.

e. Find trails—

(1) Where **2** streams meet.

(2) Where a low pass goes over a range of hills.

f. While traveling trails—

(1) Watch for disturbed areas on game trails; they may indicate a pitfall or trap.

(2) Use a walking stick to probe for pitfalls or traps.

(3) ***DO NOT*** sleep on the trail.

(4) Exercise caution, the enemy uses the trails also.

10. Open Seas

a. Using currents—

(1) Deploy sea anchor **(Figure II-11)**. Sea anchor may be adjusted to make use of existing currents.

(2) Sit low in the raft.

(3) Deflate the raft slightly so it rides lower in the water.

b. Using winds—

(1) Pull in sea anchor.

(2) Inflate raft so it rides higher.

(3) Sit up in raft so body catches the wind.

(4) Construct a shade cover/sail **(Figure II-12)**. (Sail aids in making landfall.)

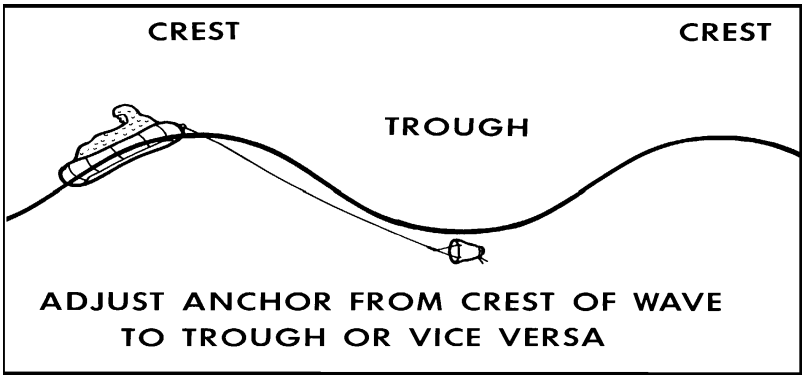

Figure II-11. Sea Anchor Deployment

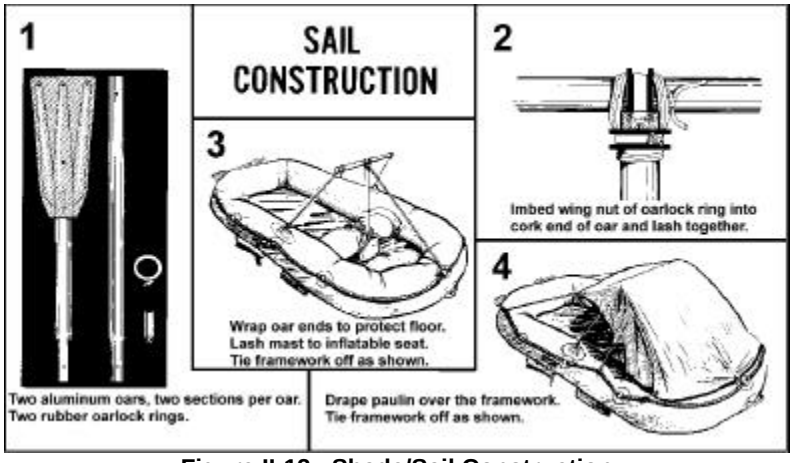

Figure II-12. Shade/Sail Construction

c. Making landfall. Indications of land are—

(1) Fixed cumulus clouds in a clear sky or in a cloudy sky where all other clouds are moving.

(2) Greenish tint in the sky **(in the tropics)**.

(3) Lighter colored reflection on clouds (open water causes dark gray reflections) (**in the arctic**).

(4) Lighter colored water (indicates shallow water).
(5) The odors and sounds.
(a) Odors from swamps and smoke.
(b) Roar of surf/bird cries coming from one direction.
(6) Directional flights of birds at dawn and at dusk.

d. Swimming ashore—
(1) Consider physical condition.
(2) Use a flotation aid.
(3) Secure all gear to body before reaching landfall.
(4) Remain in raft as long as possible.
(5) Use the sidestroke or breaststroke to conserve strength if thrown from raft.
(6) Wear footgear and at least **1** layer of clothing.
(7) Try to make landfall during the lull between the sets of waves (waves are generally in **sets** of **7**, from **smallest** to **largest**).
(8) In moderate surf.
(a) Swim forward on the back of a wave.
(b) Make a shallow dive just before the wave breaks to end the ride.
(9) In high surf.
(a) Swim shoreward in the trough between waves.
(b) When the seaward wave approaches, face it and submerge.
(c) After it passes, work shoreward in the next trough.
(10) If caught in the undertow of a large wave—
(a) Remain calm and swim to the surface.
(b) Lie as close to the surface as possible.
(c) Parallel shoreline and attempt landfall at a point further down shore.
(11) Select a landing point.
(a) Avoid places where waves explode upon rocks.
(b) Find a place where waves smoothly rush onto the rocks.
(12) After selecting a landing site—
(a) Face shoreward.
(b) Assume a sitting position with feet 2 or 3 feet lower than head to absorb the shock of hitting submerged objects.

e. Rafting ashore—

(1) Select landing point carefully.

(2) Use caution landing when the sun is low and straight in front of you causing poor visibility.

(3) Land on the lee (downwind) side of islands or point of land if possible.

(4) Head for gaps in the surf line.

(5) Penetrate surf by—

(a) Taking down most shade/sails.

(b) Using paddles to maintain control.

(c) Deploying a sea anchor for stability.

CAUTION: ***DO NOT*** deploy a sea anchor if traveling through coral.

f. Making sea ice landings on large stable ice flows. Icebergs, small flows, and disintegrating flows are dangerous **(ice can cut a raft)**.

(1) Use paddles to avoid sharp edges.

(2) Store raft away from the ice edge.

(3) Keep raft inflated and ready for use.

(4) Weight down/secure raft so it does not blow away.

Chapter III

RADIO COMMUNICATIONS AND SIGNALING

Inventory and review the operating instructions of all communications and signaling equipment.

1. Radio Communications (Voice and Data)

a. Non-combat.

(1) Ensure locator beacon is operational.

(2) Follow standing plans for on/off operations to conserve battery use.

b. Combat.

(1) Turn off locator beacon.

(2) Keep it with you to supplement radio communications.

(3) Follow plans/orders for on/off operations.

c. Make initial contact as soon as possible or as directed in applicable plans/orders.

d. If no immediate contact, then as directed in applicable plans/orders.

e. Locate spare radio and batteries (keep warm and dry).

f. Transmissions.

(1) Use concealment sites (combat) that optimize line of site (LOS).

(2) Face recovery asset.

(3) Keep antenna perpendicular to intended receiver **(Figure III-1)**.

(4) ***DO NOT*** ground antenna (that is finger on antenna or attaching bolt, space blanket, vegetation, etc.).

(5) Keep transmissions short (3-5 seconds maximum). Use data burst if available.

(6) Move after each transmission (***ONLY*** in combat, if possible).

(7) If transmitting in the blind, ensure a clear LOS towards the equator.

(8) Use terrain masking to hinder enemy direction finding.

g. Listening (use reception times in applicable plans/orders or as directed by recovery forces).

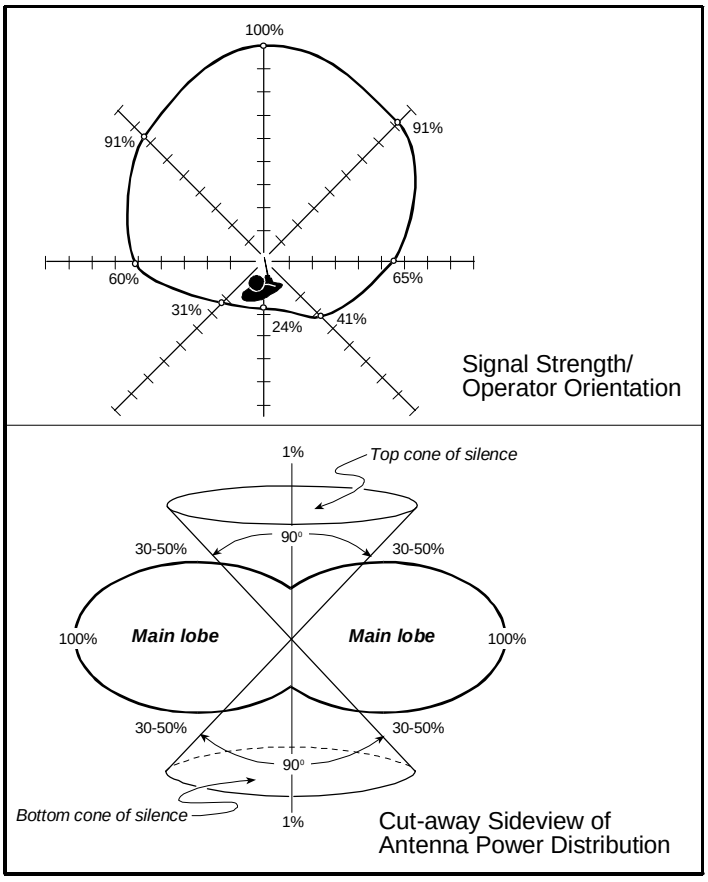

Figure III-1. Radio Transmission Characteristics

2. Signaling

a. Pyrotechnic signals.

(1) Prepare early (weather permitting).

(2) Use as directed in applicable plans/orders or as directed by recovery forces.

(3) Extend over raft's edge before activating.

b. Signal mirror **(Figure III-2)**.
   (1) Use as directed by recovery forces.
   (2) If no radio, use only with confirmed friendly forces.
   (3) Cover when not in use.

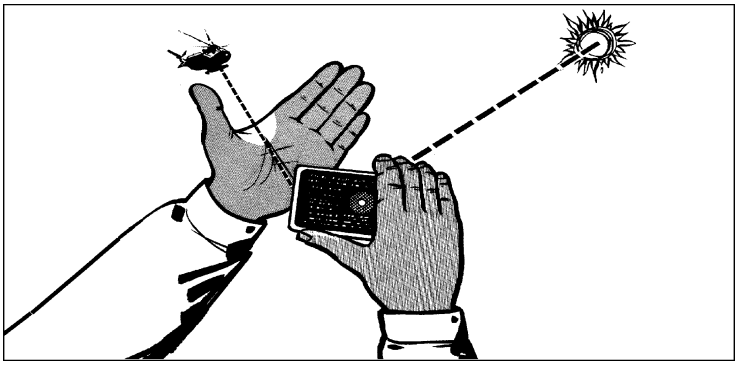

Figure III-2. Sighting Techniques

Note: Make a mirror from any shiny metal or glass.

c. Strobe/IR lights.
   (1) Prepare early, consider filters and shields.
   (2) Use as directed by recovery forces.
   (3) Conserve battery life.

Note: Produces one residual flash when turned off.

d. Pattern signals (use as directed in applicable plans/orders).
   (1) Materials:
      (a) Manmade (space blanket, signal paulin, parachute).
      (b) Natural use materials that contrast the color and/or texture of the signaling area (rocks, brush, branches, stomped grass).
   (2) Location.
      (a) Maximize visibility from above.
      (b) Provide concealment from ground observation.
   (3) Size (large as possible) and ratio **(Figure III-3)**.

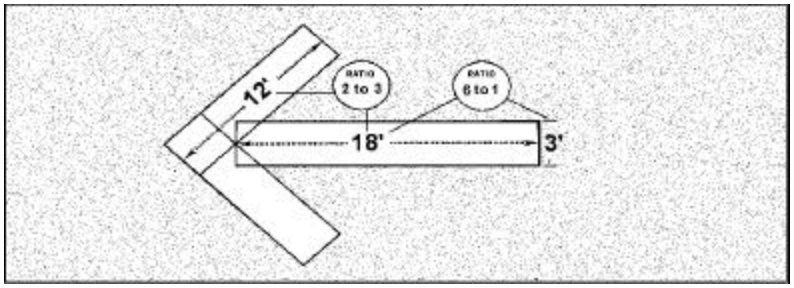

Figure III-3. Size and Ratio

(4) Shape (maintain straight lines and sharp corners).
(5) Contrast (use color and shadows).
(6) Pattern signals **(Figure III-4)**.

NO.	MESSAGE	CODE SYMBOL
1	REQUIRE ASSISTANCE	V
2	REQUIRE MEDICAL ASSISTANCE	X
3	NO or NEGATIVE	N
4	YES or AFFIRMATIVE	Y
5	PROCEEDING IN THIS DIRECTION	↑

Figure III-4. Signal Key

e. Sea dye marker.
(1) ***DO NOT*** waste in rough seas or fast moving water.
(2) Conserve unused dye by rewrapping.
(3) May be used to color snow.

f. Non-combat considerations:

(1) Use a fire at night.

(2) Use smoke for day (tires or petroleum products for dark smoke and green vegetation for light smoke). **(Figure III-5)**

(3) Use signal mirror to sweep horizon.

(4) Use audio signals (that is, voice, whistle, and weapons fire).

Figure III-5. Smoke Generator

Chapter IV

RECOVERY

1. Responsibilities

a. Establish radio contact with recovery forces (if possible).

b. Maintain communication with recovery forces until recovered.

c. Be prepared to authenticate as directed in applicable plans/orders.

d. Follow recovery force instructions, be prepared to report—

(1) Enemy activity in the recovery area.

(2) Recovery site characteristics (slope, obstacles, size, etc.).

(3) Number in party/medical situation.

(4) Signal devices available.

e. If no radio, a ground-to-air signal may be your only means to effect recovery.

2. Site Selection

a. Locate area for landing pick-up, if practical (approximately 150 feet diameter, free of obstructions, flat and level).

b. Assess evidence of human activity at/near the site (in combat).

c. Locate several concealment sites around area (in combat).

d. Plan several tactical entry and exit routes (in combat).

3. Site Preparation

a. Pack and secure all equipment.

b. Prepare signaling devices (use as directed or as briefed).

c. Mentally review recovery methods (aircraft, ground, boat, etc.).

4. Recovery Procedures

a. Assist recovery force in identifying your position.

b. Stay concealed until recovery is imminent (in combat).

c. For a landing/ground recovery—

(1) Assume a non-threatening posture.

(2) Secure weapons and avoid quick movement.

(3) ***DO NOT*** approach recovery vehicle until instructed.

(4) Beware of rotors/propellers when approaching recovery vehicle, especially on sloping or uneven terrain. Secure loose equipment that could be caught in rotors/propellers.

d. For **hoist** recovery devices **(Figures IV-1 and IV-2)**—

(1) Use eye protection, if available (glasses or helmet visor).

(2) Allow metal on device to contact the surface before touching to avoid injury from static discharge.

(3) Sit or kneel for stability while donning device.

(4) Put safety strap under armpits.

(5) Ensure cable is in front of you.

(6) Keep hands clear of all hardware and connectors.

(7) ***DO NOT*** become entangled in cable.

(8) Use a thumbs up, vigorous cable shake, or radio call to signal you are ready.

(9) Drag feet on the ground to decrease oscillation.

(10) ***DO NOT*** assist during hoist or when pulled into the rescue vehicle. Follow crewmember instructions.

e. For **nonhoist** recovery (rope or unfamiliar equipment)—

(1) Create a ***"fixed loop"*** big enough to place under armpits **(Figure IV-3)**.

(2) Follow the procedures in "**d**" above.

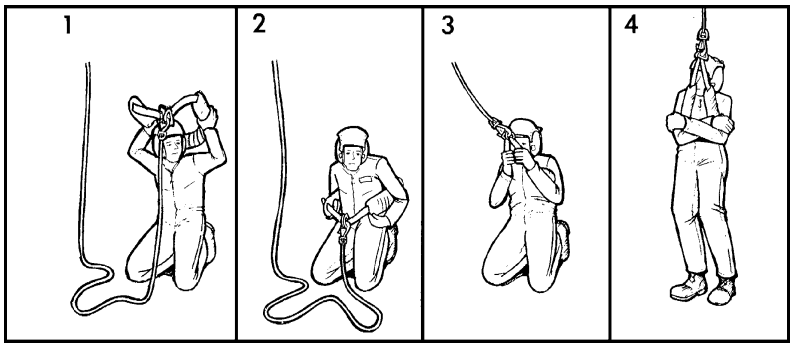

Figure IV–1. Rescue Strap

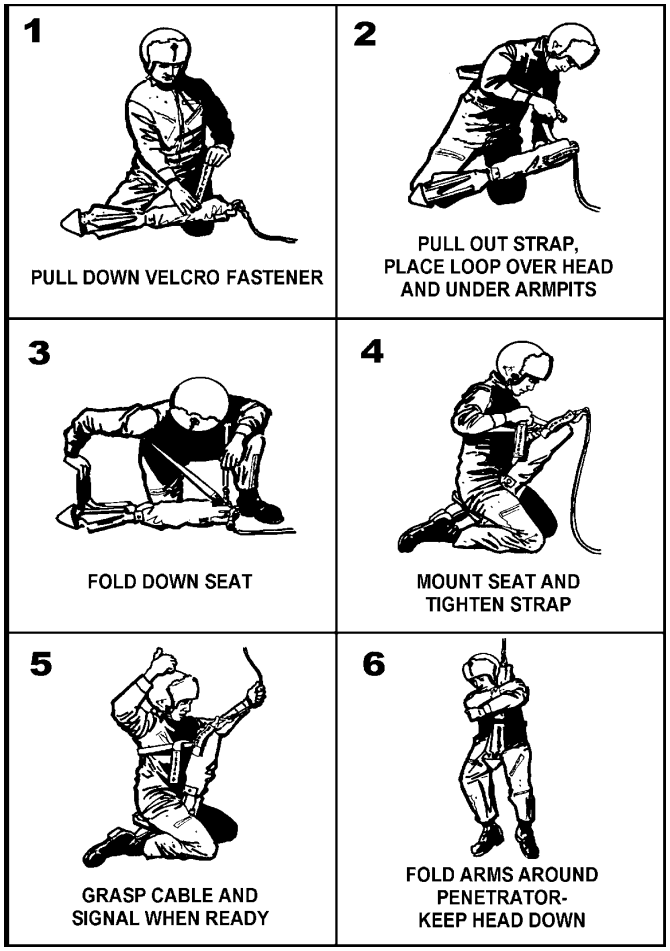

Figure IV-2. Forest Penetrator

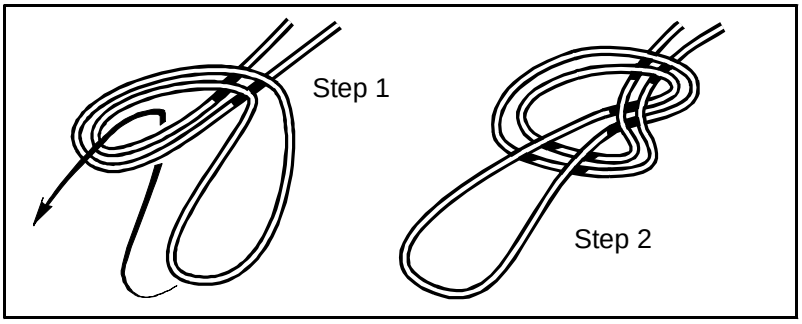

Figure IV–3. Fixed Loop

Chapter V

MEDICAL

WARNING: These emergency medical procedures are for survival situations. Obtain professional medical treatment as soon as possible.

1. Immediate First Aid Actions

Remember the *ABCs* of Emergency Care:
Airway **B**reathing **C**irculation

a. Determine responsiveness as follows:
   (1) If unconscious, arouse by shaking gently and shouting.
   (2) If no response—
      (a) Keep head and neck aligned with body.
      (b) Roll victims onto their backs.
      (c) Open the airway by lifting the chin **(Figure V-1)**.
      (d) Look, listen, and feel for air exchange.

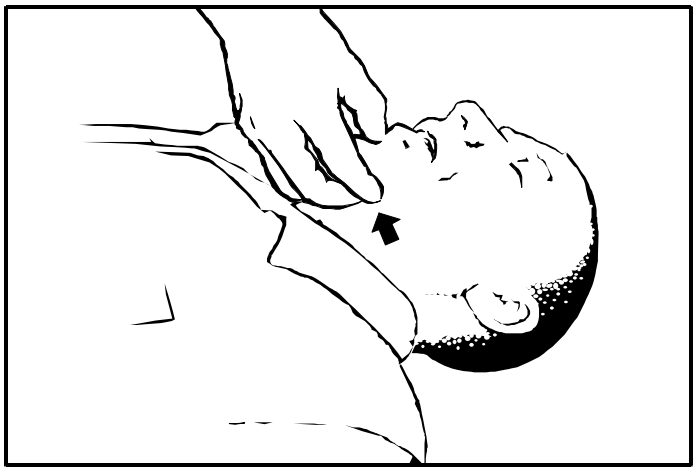

Figure V-1. Chin Lift

(3) If victim is not breathing—
(a) Check for a clear airway; remove any blockage.
(b) Cover victim's mouth with your own.
(c) Pinch victim's nostrils closed.
(d) Fill victim's lungs with **2** slow breaths.
(e) If breaths are blocked, reposition airway; try again.
(f) If breaths still blocked, give **5** abdominal thrusts:
- Straddle the victim.
- Place a fist between breastbone and belly button.
- Thrust upward to expel air from stomach.

(g) Sweep with finger to clear mouth.
(h) Try **2** slow breaths again.
(i) If the airway is still blocked, continue **(c)** through **(f)** until successful or exhausted.
(j) With open airway, start mouth to mouth breathing:
- Give **1** breath every 5 seconds.
- Check for chest rise each time.

(4) If victim is unconscious, but breathing—
(a) Keep head and neck aligned with body.
(b) Roll victim on side (drains the mouth and prevents the tongue from blocking airway).
(5) If breathing difficulty is caused by chest trauma, refer to **page V-7, paragraph 1d, *Treat Chest Injuries***.

CAUTION: ***DO NOT*** remove an impaled object unless it interferes with the airway. You may cause more tissue damage and increase bleeding. For travel, you may shorten and secure the object.

b. Control bleeding as follows:
(1) Apply a pressure dressing **(Figure V-2)**.
(2) If ***STILL*** bleeding—
(a) Use direct pressure over the wound.
(b) Elevate the wounded area above the heart.

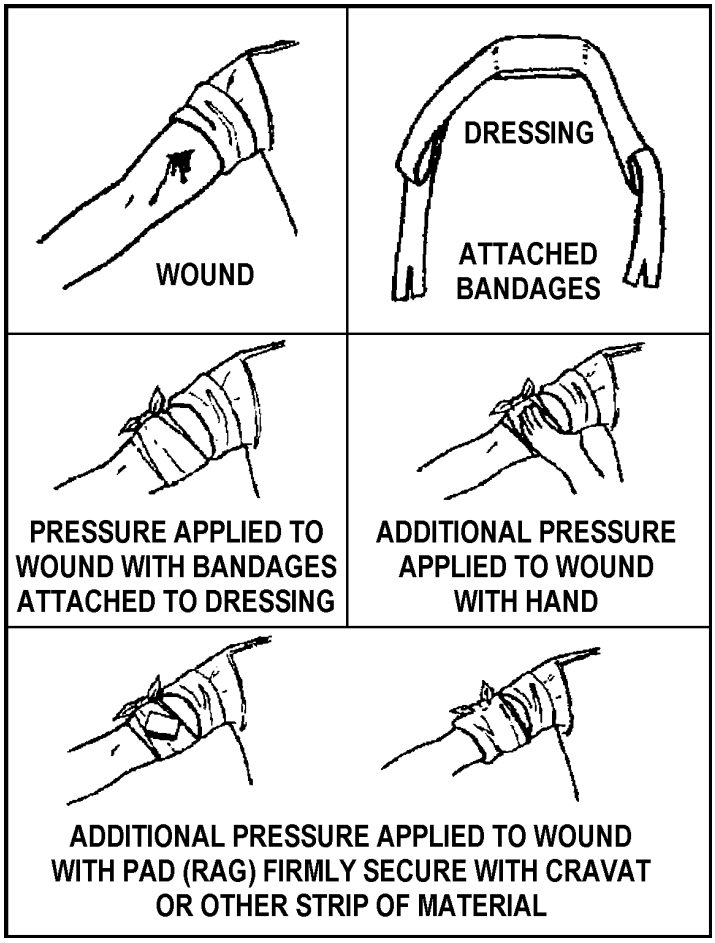
WOUND
DRESSING
ATTACHED BANDAGES
PRESSURE APPLIED TO WOUND WITH BANDAGES ATTACHED TO DRESSING
ADDITIONAL PRESSURE APPLIED TO WOUND WITH HAND
ADDITIONAL PRESSURE APPLIED TO WOUND WITH PAD (RAG) FIRMLY SECURE WITH CRAVAT OR OTHER STRIP OF MATERIAL

Figure V-2. Application of a Pressure Dressing

(3) If ***STILL*** bleeding—

(a) Use a pressure point between the injury and the heart **(Figure V-3)**.

(b) Maintain pressure for 6 to 10 minutes before checking to see if bleeding has stopped.

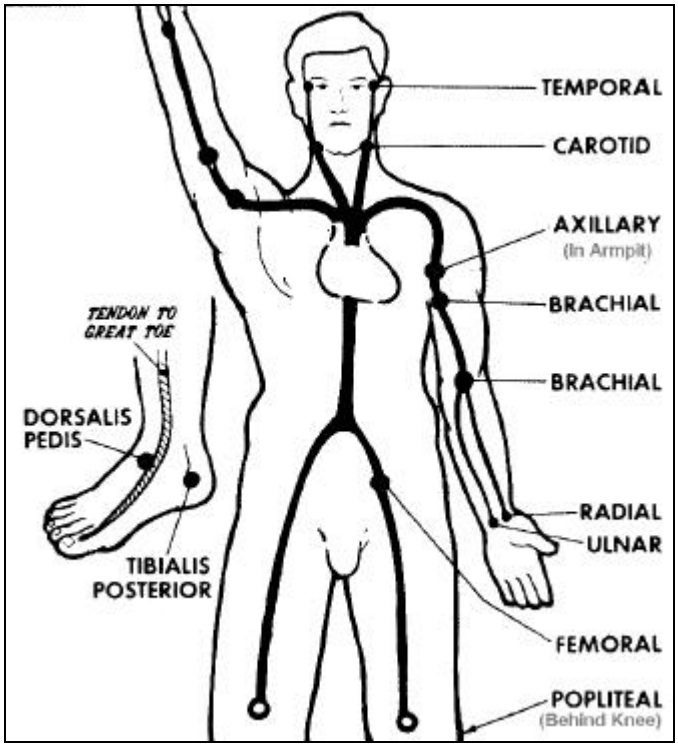

Figure V-3. Pressure Points

(4) If a limb wound is ***STILL*** bleeding—

CAUTION: Use of a tourniquet is a ***LAST RESORT*** measure. Use ***ONLY*** when severe, uncontrolled bleeding will cause loss of life. Recognize that long-term use of a tourniquet may cause loss of limb.

(a) Apply tourniquet (TK) band just above bleeding site on limb. A band at least 3 inches (7.5 cm) or wider is best.

(b) Follow steps illustrated in **Figure V-4**.

(c) Use a stick at least 6 inches (15 cm) long.

(d) Tighten only enough to stop arterial bleeding.

(e) Mark a ***TK*** on the forehead with the time applied.

(f) ***DO NOT*** cover the tourniquet.

CAUTION: The following directions apply ***ONLY*** in survival situations where rescue is ***UNLIKELY*** and ***NO*** medical aid is available.

(g) If rescue or medical aid is not available for over 2 hours, an attempt to ***SLOWLY*** loosen the tourniquet may be made 20 minutes after application. Before loosening—

- Ensure pressure dressing is in place.
- Ensure bleeding has stopped
- Loosen tourniquet ***SLOWLY*** to restore circulation.
- Leave loosened tourniquet in position in case bleeding resumes.

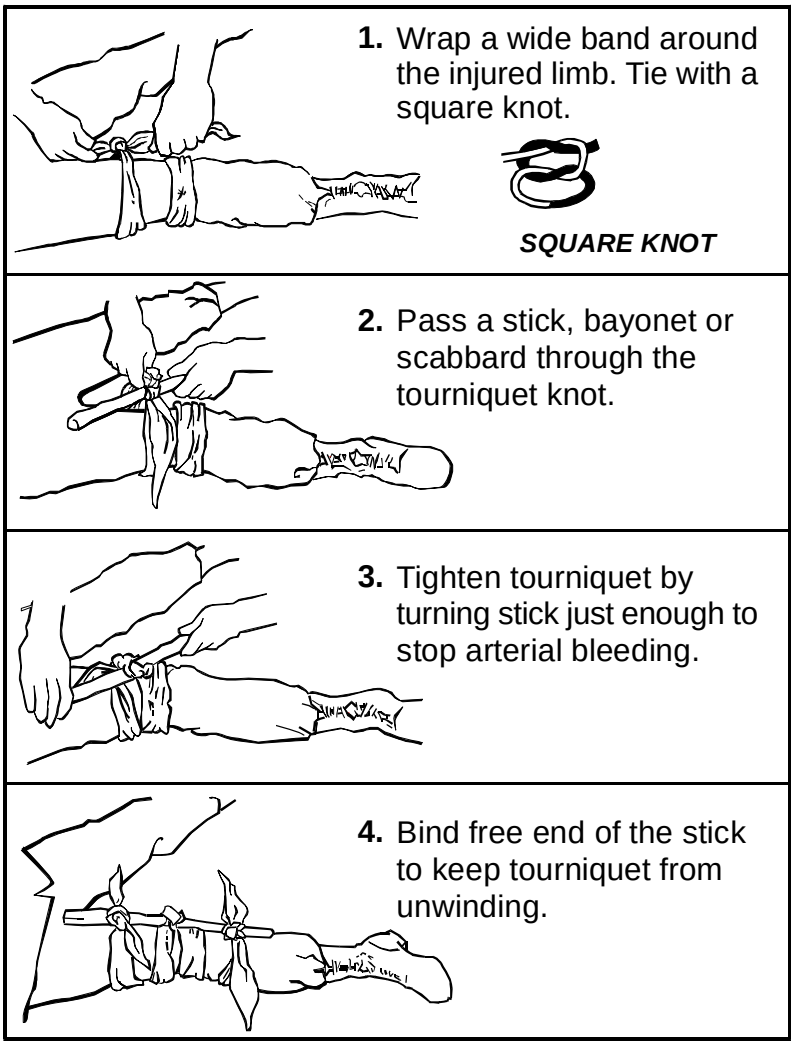
1. Wrap a wide band around the injured limb. Tie with a square knot.
SQUARE KNOT
2. Pass a stick, bayonet or scabbard through the tourniquet knot.
3. Tighten tourniquet by turning stick just enough to stop arterial bleeding.
4. Bind free end of the stick to keep tourniquet from unwinding.

Figure V-4. Application of a Tourniquet

c. Treat shock. (Shock is difficult to identify or treat under field conditions. It may be present with or without visible injury.)

(1) Identify by one or more of the following:

(a) Pale, cool, and sweaty skin.

(b) Fast breathing and a weak, fast pulse.

(c) Anxiety or mental confusion.

(d) Decreased urine output.

(2) Maintain circulation.

(3) Treat underlying injury.

(4) Maintain normal body temperature.

(a) Remove wet clothing.

(b) Give warm fluids.

- ***DO NOT*** give fluids to an unconscious victim.
- ***DO NOT*** give fluids if they cause victim to gag.

(c) Insulate from ground.

(d) Shelter from the elements.

(5) Place conscious victim on back.

(6) Place very weak or unconscious victim on side, this will—

(a) Allow mouth to drain.

(b) Prevent tongue from blocking airway.

d. Treat chest injuries.

(1) Sucking chest wound. This occurs when chest wall is penetrated; may cause victim to gasp for breath; may cause sucking sound; may create bloody froth as air escapes the chest.

(a) ***Immediately*** seal wound with hand or airtight material.

(b) Tape airtight material over wound on ***3 sides only*** **(Figure V-5)** to allow air to escape from the wound but not to enter.

(c) Monitor breathing and check dressing.

(d) Lift untapped side of dressing as victim ***exhales*** to allow trapped air to escape, as necessary.

(2) Flail chest. Results from blunt trauma when ***3*** or ***more*** ribs are broken in ***2*** or more places. The flail segment is the broken area that moves in a direction opposite to the rest of chest during breathing.

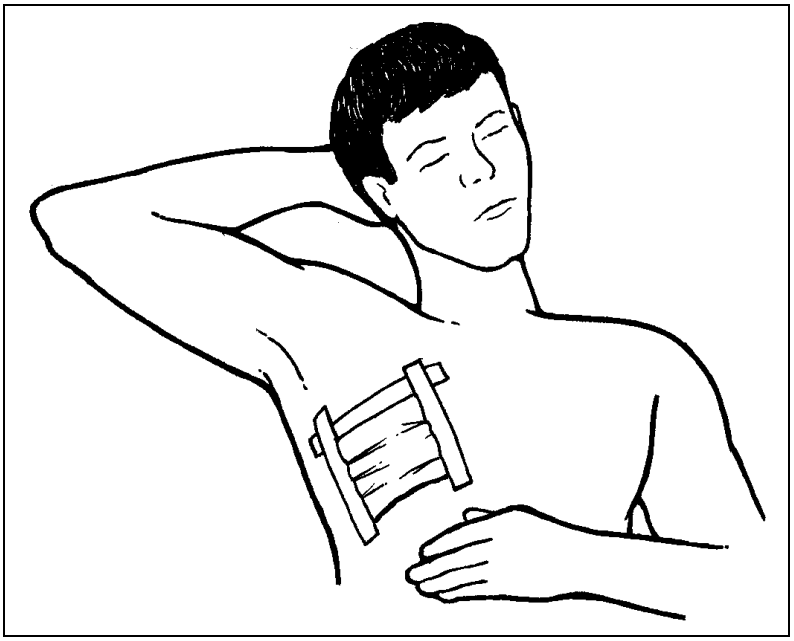

Figure V-5. Sucking Chest Wound Dressing

(a) Stabilize the flail segment as follows:
- Place rolled-up clothing or bulky pad over site.
- Tape pad to site
- ***DO NOT*** wrap tape around chest.

(b) Have victim keep segment still with hand pressure.

(c) Roll victim onto side of flail segment injury (as other injuries allow).

(3) Fractured ribs.

(a) Encourage deep breathing (painful, but necessary to prevent the possible development of pneumonia).

(b) ***DO NOT*** constrict breathing by taping ribs.

e. Treat fractures, sprains, and dislocations.

(1) Control bleeding.

(2) Remove watches, jewelry, and constrictive clothing.

(3) If fracture penetrates the skin—

(a) Clean wound by gentle irrigation with water.
(b) Apply dressing over wound.
(4) Position limb as normally as possible.
(5) Splint in position found (if ***unable*** to straighten limb).
(6) Improvise a splint with available materials:
(a) Sticks or straight, stiff materials from equipment.
(b) Body parts (for example, opposite leg, arm-to-chest).
(7) Attach with strips of cloth, parachute cord, etc.
(8) Keep the fractured bones from moving by immobilizing the joints on both sides of the fracture. If fracture is in a joint, immobilize the bones on both sides of the joint.

CAUTION: Splint fingers in a slightly flexed position, ***NOT*** in straight position. Hand should look like it is grasping an apple.

(9) Use ***RICES*** treatment for 72 hours.
(a) **R**est.
(b) **I**ce.
(c) **C**ompression.
(d) **E**levation.
(e) **S**tabilization.
(10) Apply cold to acute injuries.
(11) Use 15 to 20 minute periods of cold application.
(a) ***DO NOT*** use continuous cold therapy.
(b) Repeat 3 to 4 times per day.
(c) Avoid cooling that can cause frostbite or hypothermia.
(12) Wrap with a compression bandage after cold therapy.
(13) Elevate injured area above heart level to reduce swelling.
(14) Check periodically for a pulse beyond the injury site.
(15) Loosen bandage or reapply splint if no pulse is felt or if swelling occurs because bandage is too tight.

2. Common Injuries and Illnesses

a. Burns.
(1) Cool the burned area with water.
(a) Use immersion or cool compresses.
(b) Avoid aggressive cooling with ice or frigid water.
(2) Remove watches, jewelry, constrictive clothing.

(3) ***DO NOT*** remove embedded, charred material that will cause burned areas to bleed.

(4) Cover with sterile dressings.

(5) ***DO NOT*** use lotion or grease.

(6) Avoid moving or rubbing the burned part.

(7) Drink ***extra*** water to compensate for increased fluid loss from burns. (Add ***1/4 teaspoon*** of ***salt*** [if available] to ***each quart*** of ***water***.)

(8) Change dressings when soaked or dirty.

b. Eye injuries.

(1) Sun/snow blindness (gritty, burning sensation, and possible reduction in vision caused by sun exposure).

(a) Prevent with improvised goggles. **(See Chapter VI, page VI-3, Figure VI-2.)**

(b) Treat by patching affected eye(s).

- Check after 12 hours.
- Replace patch for another 12 hours if not healed.

(c) Use cool compresses to reduce pain.

(2) Foreign body in eye.

(a) Irrigate with clean water from the ***inside*** to the ***outside*** corner of the eye.

(b) If foreign body is not removed by irrigation, improvise a small swab. Moisten and wipe gently over the affected area.

(c) If foreign body is ***STILL*** not removed, patch eye for 24 hours and then reattempt removal using steps **(a)** and **(b)**.

c. Heat injury.

(1) Heat cramps (cramps in legs or abdomen).

(a) Rest.

(b) Drink water. Add ***1/4 teaspoon*** of salt ***per quart***.

(2) Heat exhaustion (pale, sweating, moist, cool skin).

(a) Rest in shade.

(b) Drink water.

(c) Protect from further heat exposure.

(3) Heat stroke (victim disoriented or unconscious, skin is hot and flushed [sweating **may** or **may not** occur], fast pulse).

CAUTION: Handle heat stroke victim gently. Shock, seizures, and cardiac arrest can occur.

(a) Cool as rapidly as possible (saturate clothing with water and fan the victim). Remember to cool the groin and armpit areas. (Avoid overcooling.)

(b) Maintain airway, breathing, and circulation.

d. Cold injuries:

(1) Frostnip and frostbite—

(a) Are progressive injuries.

•Ears, nose, fingers, and toes are affected first.

•Areas will feel cold and may tingle leading to—

••Numbness that progresses to—

•••Waxy appearance with stiff skin that cannot glide freely over a joint.

(b) Frostnipped areas rewarm with body heat. If body heat ***WILL NOT*** rewarm area in 15 to 20 minutes, then frostbite is present.

(c) Frostbitten areas are deeply frozen and require medical treatment.

CAUTION: In frostbite, repeated freezing and thawing causes severe pain and increases damage to the tissue. ***DO NOT*** rub frozen tissue. ***DO NOT*** thaw frozen tissue.

(2) Hypothermia—

(a) Is a progressive injury.

•Intense shivering with impaired ability to perform complex tasks leads to—

••Violent shivering, difficulty speaking, sluggish thinking go to—

•••Muscular rigidity with blue, puffy skin; jerky movements go to—

••••Coma, respiratory and cardiac failure.

(b) Protect victim from the environment as follows:

•Remove wet clothing.

•Put on dry clothing (if available).

•Prevent further heat loss.

••Cover top of head.

••Insulate from above and below.

•Warm with blankets, sleeping bags, or shelter.

•Warm central areas before extremities.

••Place heat packs in groin, armpits, and around neck.

••Avoid causing burns to skin.

CAUTION: Handle hypothermia victim gently. Avoid overly rapid rewarming which may cause cardiac arrest. Rewarming of victim with skin-to-skin contact by volunteer(s) inside of a sleeping bag is a survival technique but can cause internal temperatures of all to drop.

e. Skin tissue damage.

(1) Immersion injuries. Skin becomes wrinkled as in ***dishpan hands***.

(a) Avoid walking on affected feet.

(b) Pat dry; ***DO NOT*** rub. Skin tissue will be sensitive.

(c) Dry socks and shoes. Keep feet protected.

(d) Loosen boots, cuffs, etc., to improve circulation.

(e) Keep area dry, warm, and open to air.

(f) ***DO NOT*** apply creams or ointments.

(2) Saltwater sores.

(a) Change body positions frequently.

(b) Keep sores dry.

(c) Use antiseptic (if available).

(d) ***DO NOT*** open or squeeze sores.

f. Snakebite.

CAUTION: This snakebite treatment recommendation is for situations where medical aid and specialized equipment are not available.

(1) Nonpoisonous. Clean and bandage wound.

(2) Poisonous.

(a) Remove constricting items.

(b) Minimize activity.

(c) ***DO NOT*** cut the bite site; ***DO NOT*** use your mouth to create suction.

(d) Clean bite with soap and water; cover with a dressing.

(e) Overwrap the bite site with a tight (elastic) bandage **(Figure V-6)**. The intent is to slow capillary and venous blood flow but not arterial flow. Check for pulse below the overwrap.

(f) Splint bitten extremity to prevent motion.

(g) Treat for shock **(page V-7, paragraph 1c)**.

(h) Position extremity below level of heart.

(i) Construct shelter if necessary (let the victim rest).

(j) For conscious victims, force fluids.

g. Marine life.

(1) Stings.

(a) Flush wound with salt water (fresh water stimulates toxin release).

(b) Remove jewelry and watches.

(c) Remove tentacles and gently scrape or shave skin.

(d) Apply a steroid cream (if available).

(e) ***DO NOT*** rub area with sand.

(f) Treat for shock; artificial respiration may be required **(page V-1, paragraph 1a)**.

(g) ***DO NOT*** use urine to flush or treat wounds.

(2) Punctures.

(a) Immerse affected part in hot water or apply hot compresses for 30-60 minutes (as hot as victim can tolerate).

(b) Cover with clean dressing.

(c) Treat for shock as needed.

h. Skin irritants (includes poison oak and poison ivy).

(1) Wash with large amounts of water. Use soap (if available).

(2) Keep covered to prevent scratching.

i. Infection.

(1) Keep wound clean.

(2) Use iodine tablet solution or diluted betadine to prevent or treat infection.

(3) Change bandages as needed.

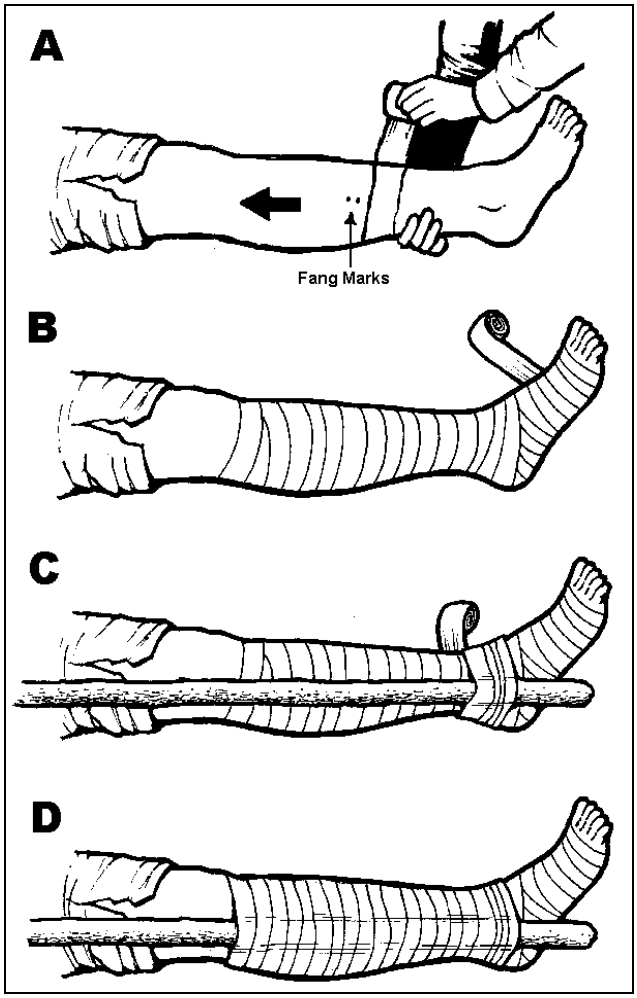

Figure V-6. Compression Bandage for Snake Bite

j. Dysentery and diarrhea.

(1) Drink ***extra*** water.

(2) Use a liquid diet.

(3) Eat charcoal. Make a paste by mixing fine charcoal particles with water. (It may relieve symptoms by absorbing toxins.)

k. Constipation (can be expected in survival situations).

(1) ***DO NOT*** take laxatives.

(2) Exercise.

(3) Drink **extra** water.

3. Plant Medicine

a. Tannin.

(1) Medical uses. Burns, diarrhea, dysentery, skin problems, and parasites. Tannin solution prevents infection and aids healing.

(2) Sources. Found in the outer bark of all trees, acorns, banana plants, common plantain, strawberry leaves, and blackberry stems.

(3) Preparation.

(a) Place crushed outer bark, acorns, or leaves in water.

(b) Leach out the tannin by soaking or boiling.

- Increase tannin content by longer soaking time.
- Replace depleted material with fresh bark/plants.

(4) Treatments.

(a) Burns.

- Moisten bandage with cooled tannin tea.
- Apply compress to burned area.
- Pour cooled tea on burned areas to ease pain.

(b) Diarrhea, dysentery, and worms. Drink strong tea solution (may promote voiding of worms).

(c) Skin problems (dry rashes and fungal infections). Apply cool compresses or soak affected part to relieve itching and promote healing.

(d) Lice and insect bites. Wash affected areas with tea to ease itching.

b. Salicin/salicylic acid.

(1) Medical uses. Aches, colds, fever, inflammation, pain, sprains, and sore throat (aspirin-like qualities).

(2) Sources. Willow and aspen trees **(Figure V-7)**.

(3) Preparation.

(a) Gather twigs, buds, or cambium layer (soft, moist layer between the outer bark and the wood) of willow or aspen.

(b) Prepare tea as described in paragraph **3a(3)**.

(c) Make poultice.

- Crush the plant or stems.
- Make a pulpy mass.

(4) Treatments.

(a) Chew on twigs, buds, or cambium for symptom relief.

(b) Drink tea for colds and sore throat.

(c) Use warm, moist poultice for aches and sprains.

- Apply pulpy mass over injury.
- Hold in place with a dressing.

c. Common plantain.

(1) Medical uses. Itching, wounds, abrasions, stings, diarrhea, and dysentery.

(2) Source. There are over 200 plantain species with similar medicinal properties. The common plantain is shown in **Figure V-7**.

(3) Preparation.

(a) Brew tea from seeds.

(b) Brew tea from leaves.

(c) Make poultice of leaves.

(4) Treatments.

(a) Drink tea made from seeds for diarrhea or dysentery.

(b) Drink tea made from leaves for vitamin and minerals.

(c) Use poultice to treat cuts, sores, burns, and stings.

d. Papain.

(1) Medical uses. Digestive aid, meat tenderizer, and a food source.

(2) Source. Fruit of the papaya tree **(Figure V-7)**.

(3) Preparation.

(a) Make cuts in **unripe** fruit.

(b) Gather milky white sap for its papain content.

(c) Avoid getting sap in eyes or wounds.

(4) Treatments.

(a) Use sap to tenderize tough meat.

(b) Eat **ripe** fruit for food, vitamins, and minerals.

e. Common Cattail.

(1) Medical uses. Wounds, sores, boils, inflammations, burns, and an excellent food source.

(2) Source. Cattail plant found in marshes **(Figure V-7)**.

(3) Preparation.

(a) Pound roots into a pulpy mass for a poultice.

(b) Cook and eat green bloom spikes.

(c) Collect yellow pollen for flour substitute.

(d) Peel and eat tender shoots (raw or cooked).

(4) Treatments.

(a) Apply poultice to affected area.

(b) Use plant for food, vitamins, and minerals.

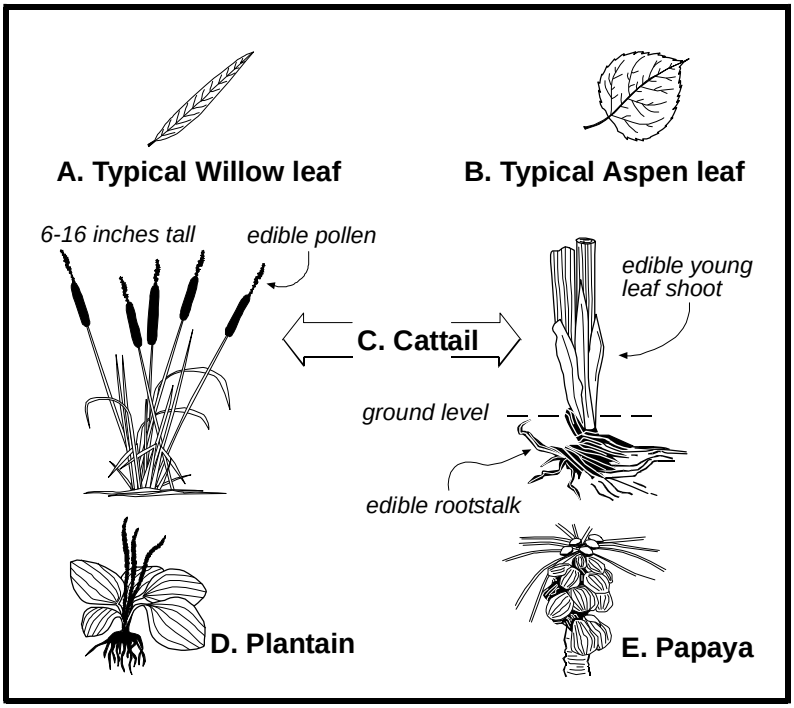

Figure V-7. Useful Plants

4. Health and Hygiene

a. Stay clean (daily regimen).

(1) Minimize infection by washing. (Use white ashes, sand, or loamy soil as soap substitutes.)

(2) Comb and clean debris from hair.

(3) Cleanse mouth and brush teeth.

(a) Use hardwood twig as toothbrush (fray it by chewing on one end then use as brush).

(b) Use single strand of an inner core string from parachute cord for dental floss.

(c) Use clean finger to stimulate gum tissues by rubbing.

(d) Gargle with salt water to help prevent sore throat and aid in cleaning teeth and gums.

(4) Clean and protect feet.

(a) Change and wash socks

(b) Wash, dry, and massage.

(c) Check frequently for blisters and red areas.

(d) Use adhesive tape/mole skin to prevent damage.

b. Exercise daily.

c. Prevent and control parasites.

(1) Check body for lice, fleas, ticks, etc.

(a) Check body regularly.

(b) Pick off insects and eggs (***DO NOT*** crush).

(2) Wash clothing and use repellents.

(3) Use smoke to fumigate clothing and equipment.

5. Rules for Avoiding Illness

a. Purify all water obtained from natural sources by using iodine tablets, bleach, or boiling for 5 minutes.

b. Locate latrines 200 feet from water and away from shelter.

c. Wash hands before preparing food or water.

d. Clean all eating utensils after each meal.

e. Prevent insect bites by using repellent, netting, and clothing.

f. Dry wet clothing as soon as possible.

g. Eat varied diet.

h. Try to get 7-8 hours sleep per day.

Chapter VI

PERSONAL PROTECTION

1. Priorities

a. Evaluate available resources and situation, then accomplish individual tasks accordingly.

b. First 24 hours in order of situational needs—

(1) Construct survival shelter according to selection criteria.
(2) Procure water.
(3) Establish multiple survival signals.
(4) Build Fire.

c. Second 24 hours in order of situational needs—

(1) Construct necessary tools and weapons.
(2) Procure food.

2. Care and Use of Clothing

a. Never discard clothing.

b. Wear loose and layered clothing.

(1) Tight clothing restricts blood flow regulating body temperature.

(2) Layers create more dead air space.

c. Keep entire body covered to prevent sunburn and dehydration in hot climates. When fully clothed, the majority of body heat escapes through the head and neck areas.

d. Avoid overheating.

(1) Remove layers of clothing before strenuous activities.
(2) Use a hat to regulate body heat.
(3) Wear a hat when in direct sunlight (in hot environment).

e. Dampen clothing when on the ocean in hot weather.

(1) Use salt water, ***NOT*** drinking water.
(2) Dry clothing before dark to prevent hypothermia.

f. Keep clothing dry to maintain its insulation qualities (dry damp clothing in the sun or by a fire).

g. If you fall into the water in the winter—

(1) Build fire.
(2) Remove wet clothing and rewarm by fire.
(3) Finish drying clothing by fire.

h. If no fire is available—
   (1) Remove clothing and get into sleeping bag (if available).
   (2) Allow wet clothes to freeze.
   (3) Break ice out of clothing.

i. Keep clothing clean (dirt reduces its insulation qualities). Examine clothing frequently for damage.
   (1) ***DO NOT*** sit or lie directly on the ground.
   (2) Wash clothing whenever possible.
   (3) Repair when necessary by using—
      (a) Needle and thread.
      (b) Safety pins.
      (c) Tape.

j. Improvised foot protection **(Figure VI-1)**.
   (1) Cut **2** to **4** layers of cloth into a 30-inch square.
   (2) Fold into a triangle.
   (3) Center foot on triangle with toes toward corner.

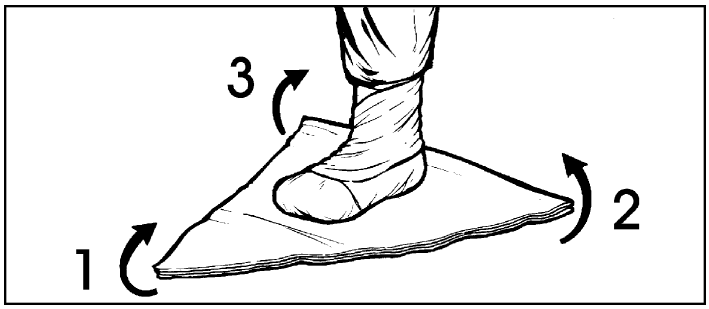

Figure VI-1 Improvised Foot Wear

   (4) Fold front over the toes.
   (5) Fold side corners, one at a time, over the instep.
   (6) Secure by rope, vines, tape, etc., or tuck into other layers of material.

3. Other Protective Equipment

a. Sleeping bag.
   (1) Fluff before use, ***especially*** at foot of bag.
   (2) Air and dry daily to remove body moisture.

(3) Improvise with available material, dry grass, leaves, dry moss, etc.

b. Sun and snow goggles **(Figure VI-2)**.

(1) Wear in bright sun or snow conditions.

(2) Improvise by cutting small horizontal slits in webbing, bark, or similar materials.

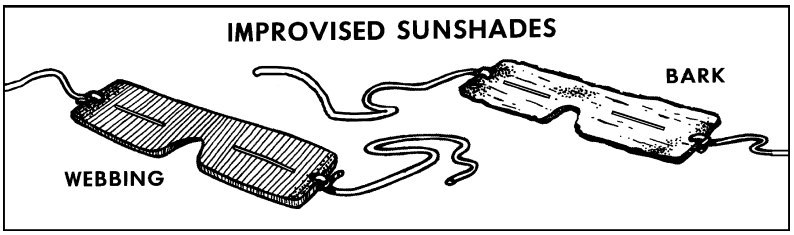

Figure VI-2. Sun and Snow Goggles

c. Gaiters **(Figure VI-3)**. Used to protect from sand, snow, insects, and scratches (wrap material around lower leg and top of boots).

Figure VI-3. Gaiters

4. Shelters

Evasion considerations apply.

a. Site selection.

(1) Near signal and recovery site.

(2) Available food and water.

(3) Avoid natural hazards:

(a) Dead standing trees.
(b) Drainage and dry river beds except in combat areas.
(c) Avalanche areas.

(4) Location large and level enough to lie down in.

b. Types.

(1) Immediate shelters. Find shelter needing minimal improvements **(Figure VI-4)**.

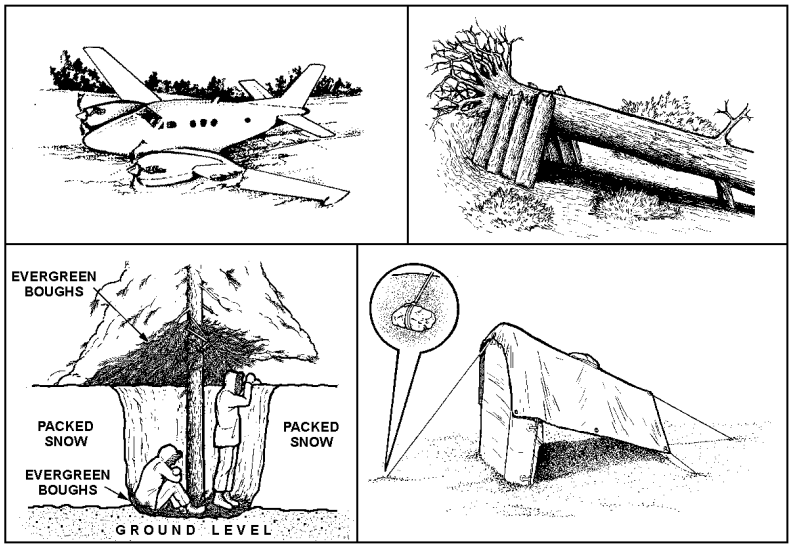

Figure VI-4. Immediate Shelters

(2) General shelter. Temperate climates require any shelter that gives protection from wind and rain.

(3) Thermal A Frame, Snow Trench, Snow Cave. **(Figures VI-5 through VI-7)**. Cold climates require an enclosed, insulated shelter.

(a) Snow is the most abundant insulating material.

(b) Air vent is required to prevent carbon monoxide poisoning when using an open flame inside enclosed shelters.

Note: As a general rule, unless you can see your breath, your snow shelter is too warm and should be cooled down to preclude melting and dripping.

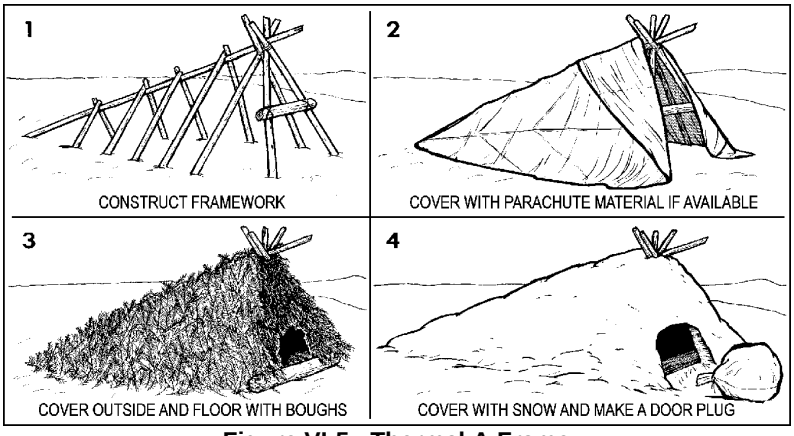

Figure VI-5. Thermal A Frame

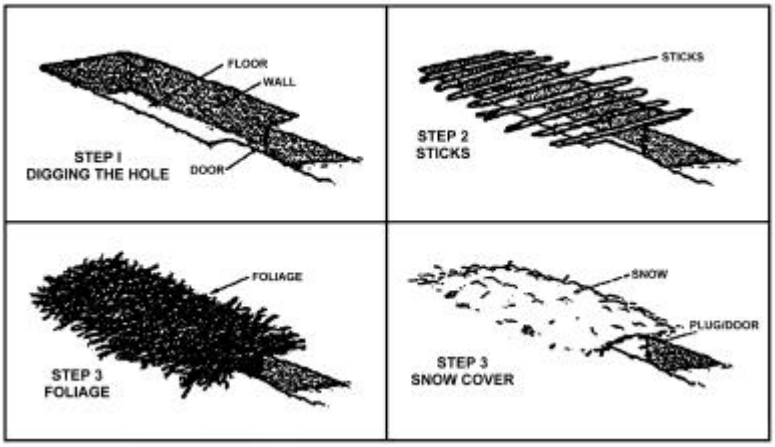

Figure VI-6. Snow Trench

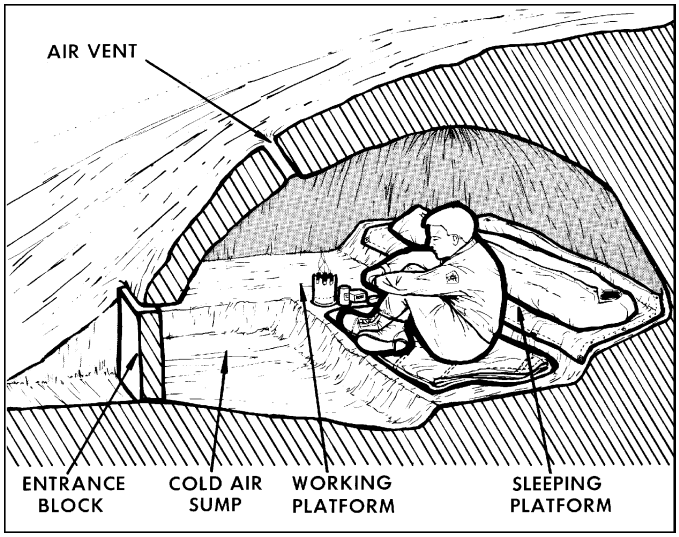

Figure VI-7. Snow Cave

(4) Shade shelter. Hot climates require a shade shelter to protect from ultraviolet rays **(Figure VI-8)**.

(a) To reduce the surface temperature, the shelter floor should be elevated or dug down (approximately 18 inches).

(b) For thermal protection, a minimum of **2** layers of material suspended 12-18 inches above the head is required. White is the best color to reflect heat (inner most layer should be of darker material).

(5) Elevated platform shelter **(Figure VI-9)**. Tropical/wet climates require enclosed, elevated shelter for protection from dampness and insects.

c. Shelter construction.

(1) Have entrance 45-90 degrees from prevailing wind.

(2) Cover with available material.

(a) If natural materials are used, arrange them in layers starting at the bottom with each layer overlapping the previous one. See **Figure VI-10** for an example.

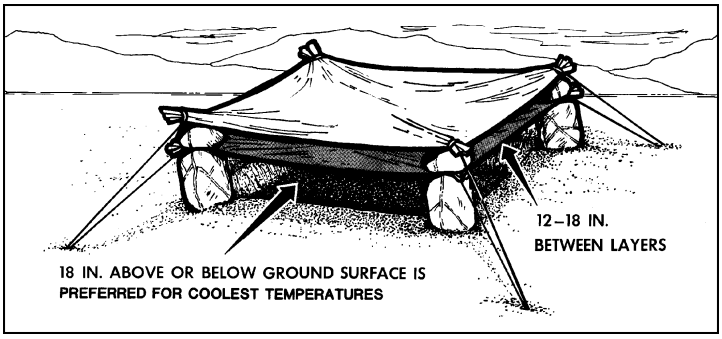

Figure VI-8. Poncho/Parachute Shade Shelter

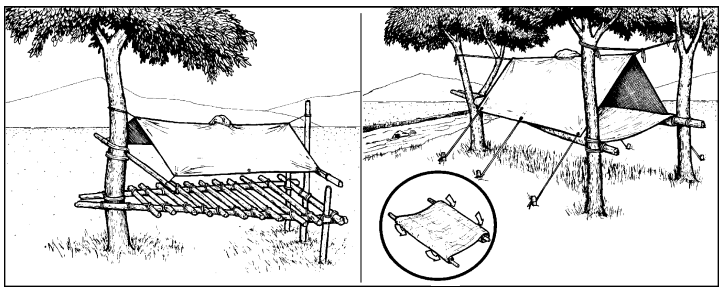

Figure VI-9. Elevated Platform Shelter

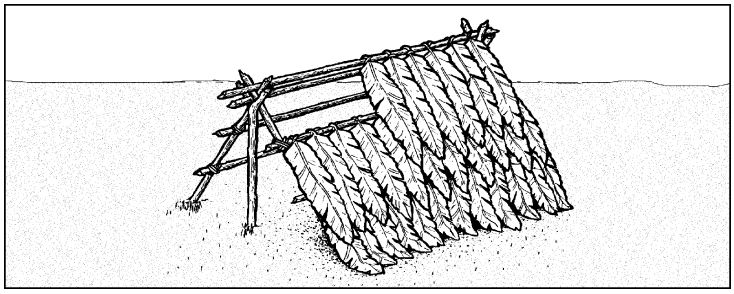

Figure VI-10. Shingle Method

(b) If using porous material like parachute, blankets, etc.—

- Stretch as tight as possible
- Use a 40–60 degree slope.
- Use additional layers in heavy rain.

d. Shelter construction materials:

(1) Raft and raft parts.
(2) Vehicle or aircraft parts.
(3) Blankets, poncho, or parachute material.
(4) Sheet of plastic or plastic bag.
(5) Bark peeled off dead trees.
(6) Boughs, broad leaves, dry moss.
(7) Grass and sod.
(8) Snow.
(9) Sand and rocks.

e. Bed construction. Construct a bed to protect from cold, damp, ground using—

(1) Raft or foam rubber from vehicle seats.
(2) Boughs, leaves, or dry moss.

5. Fires

CAUTION: Weigh hazards and risks of detection against the need for a fire.

a. Evasion considerations:

(1) Use trees or other sources to dissipate smoke.
(2) Use fires at dusk, dawn, or during inclement weather.
(3) Use fires at times when the local populace is cooking.

b. Fire building. The **3** essential elements for starting a fire are heat, fuel, and oxygen.

(1) Heat sources:

(a) Matches or lighter.
(b) Flint and steel (experiment with various rocks and metals until a good spark is produced).
(c) Sparks from batteries.
(d) Concentrated sunlight (use magnifying glass or flashlight reflectors).
(e) Pyrotechnics, such as flares **(last resort)**, etc.

(f) Friction method **(Figure VI-11)**. Without prior training, this method is difficult to master and requires a lot of time to build the device.

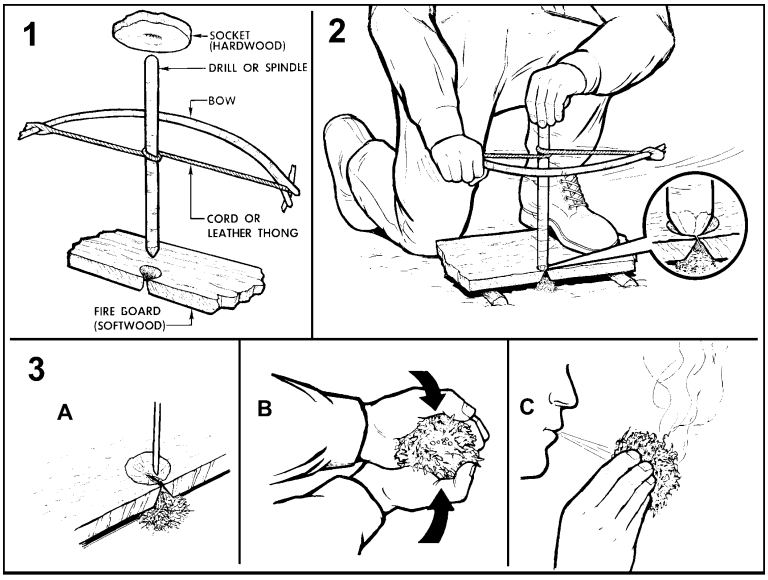

Figure VI-11. Friction Method

Note: If possible, carry a fire-starting device with you.

(2) Fuel is divided into **3** categories: tinder, kindling, and fuel. (Gather large amounts of each category before igniting the fire.)

(a) **Tinder**. Tinder must be very finely shaved or shredded to provide a low combustion point and fluffed to allow oxygen to flow through. (To get tinder to burn hotter and longer, saturate with Vaseline, Chapstick, insect repellant, aircraft fuel, etc.) Examples of tinder include—

- Cotton.
- Candle (shred the wick, not the wax).
- Plastic spoon, fork, or knife.
- Foam rubber.

- Dry bark.
- Dry grasses.
- Gun powder.
- Pitch.
- Petroleum products.

(b) **Kindling**. Kindling must be small enough to ignite from the small flame of the tinder. Gradually add larger kindling until arriving at the size of fuel to burn.

(c) **Fuel**. Examples of fuel include—

- Dry hardwood (removing bark reduces smoke).
- Bamboo (open chambers to prevent explosion).
- Dry dung.

c. Types. Fires are built to meet specific needs or uses.

(1) Tepee fire **(Figure VI-12)**. Use the tepee fire to produce a concentrated heat source for cooking, lighting, or signaling.

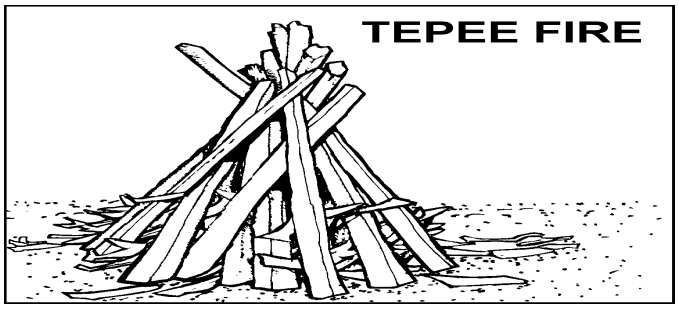

Figure VI-12. Tepee Fire

(2) Log cabin fire **(Figure VI-13)**. Use the log cabin fire to produce large amounts of light and heat, to dry out wet wood, and provide coals for cooking, etc.

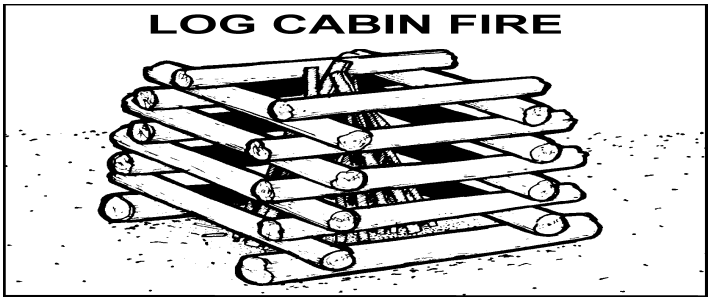

Figure VI-13. Log Cabin or Pyramid Fires

(3) Sod fire and reflector (**Figure VI-14)**. Use fire reflectors to get the most warmth from a fire. Build fires against rocks or logs.

CAUTION: ***DO NOT*** use porous rocks or riverbed rock—they may explode when heated.

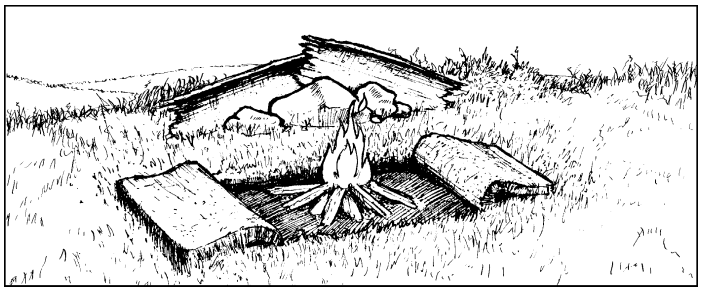

Figure VI-14. Sod Fire and Reflector

(4) Dakota fire hole (Figure VI-15). Use the Dakota fire hole for high winds or evasion situations.

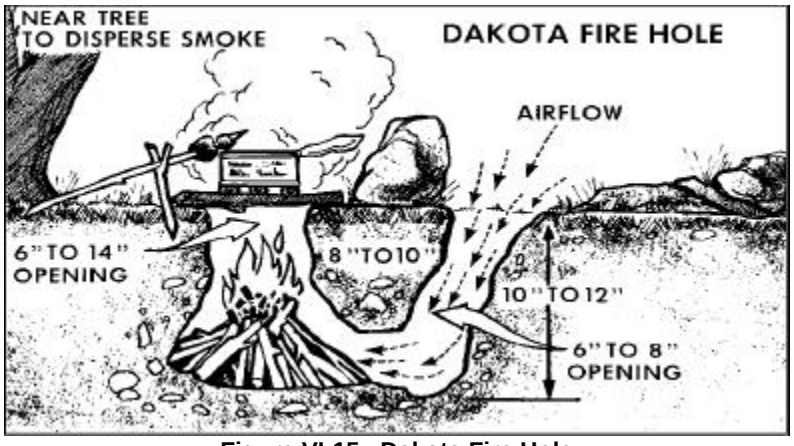

Figure VI-15. Dakota Fire Hole

(5) Improvised stoves **(Figure VI-16)**. These are very efficient.

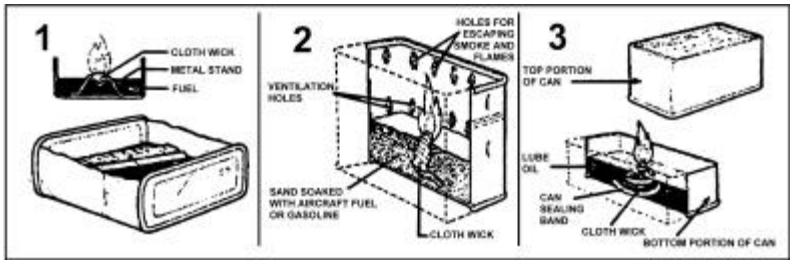

Figure VI-16. Improvised Stove

Chapter VII

Water

1. Water Requirements

Drink **extra** water. Minimum 2 quarts per day to maintain fluid level. Exertion, heat, injury, or an illness increases water loss.

Note: Pale yellow urine indicates adequate hydration.

2. Water Procurement

a. ***DO NOT*** drink—
   (1) Urine.
   (2) Fish juices.
   (3) Blood.
   (4) Sea water.
   (5) Alcohol.
   (6) Melted water from new sea ice.

b. Water sources:
   (1) Surface water (streams, lakes, and springs).
   (2) Precipitation (rain, snow, dew, sleet) **(FigureVII-1)**.
   (3) Subsurface (wells and cisterns).
   (4) Ground water (when no surface water is available) **(Figure VII-2)**.
      (a) Abundance of lush green vegetation.
      (b) Drainages and low-lying areas.
      (c) ***"V"*** intersecting game trails often point to water.
      (d) Presence of swarming insects indicates water is near.
      (e) Bird flight in the early morning or late afternoon might indicate the direction to water.
   (5) Snow or ice.
      (a) ***DO NOT*** eat ice or snow.
         - Lowers body temperature.
         - Induces dehydration.
         - Causes minor cold injury to lips and mouth.

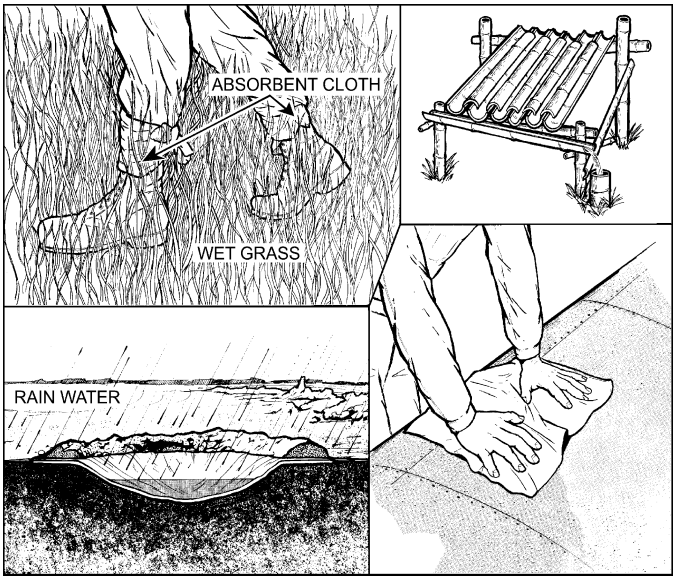

Figure VII-1. Water Procurement

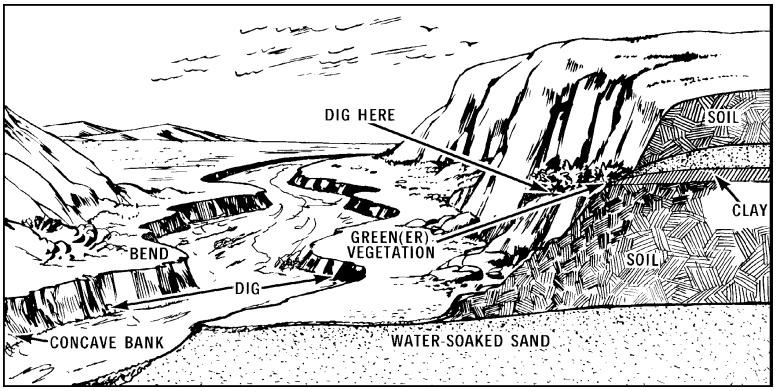

Figure VII-2. Water Indicators

(b) Melt with fire.
- Stir frequently to prevent damaging container.
- Speed the process by adding hot rocks or water.

(c) Melt with body heat.
- Use waterproof container.
- Place between layers of clothing.
- ***DO NOT*** place next to the skin**.**

(d) Use a water generator **(Figure VII-3)**.

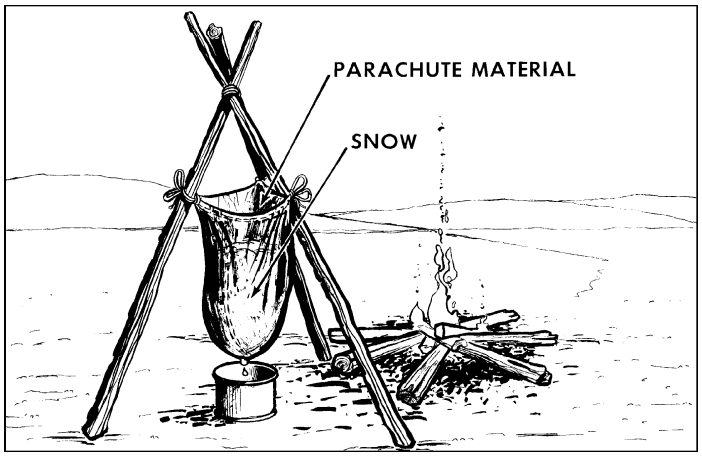

Figure VII-3. Water Generator

(6) Open seas.
- (a) Water available in survival kits.
- (b) Precipitation.
  - Drink as much as possible.
  - Catch rain in spray shields and life raft covers.
  - Collect dew off raft.
- (c) Old sea ice or icebergs **(Table VII-1)**.

Table VII-1. Old Sea Ice or Icebergs

OLD SEA ICE	NEW SEA ICE
Bluish or blackish	Milky or grey
Shatters easily	Does not break easily
Rounded corners	Sharp edges
Tastes relatively salt-free	Tastes extremely salty

(7) Tropical areas.

(a) All open sources previously mentioned.

(b) Vegetation.

•Plants with hollow sections can collect moisture.

•Leaning Tree. Cloth absorbs rain running down tree and drips into container **(Figure VII-4)**.

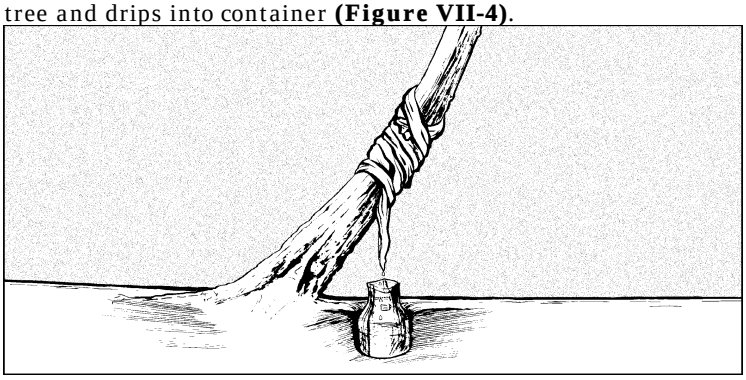

Figure VII-4. Leaning Tree

•Banana plants.

•Water trees (avoid milky sap).

••Tap before dark. Let sap stop running and harden during the daytime.

••Produce most water at night.

••For evasion situations, bore into the roots and collect water.

•Vines **(Figure VII-5A)**.

••Cut bark (***DO NOT*** use milky sap).

••If juice is clear and water like, cut as large a piece of vine as possible (cut the top first).

••Pour into hand to check smell, color, and taste to determine if drinkable.

••***DO NOT*** touch vine to lips.

••When water flow stops, cut off 6 inches of opposite end, water will flow again.

•Old bamboo.

••Shake and listen for water.

••Bore hole at bottom of section to obtain water.

••Cut out entire section to carry with you.
••Filter and purify.

•Green bamboo **(Figure VII-5B)**.

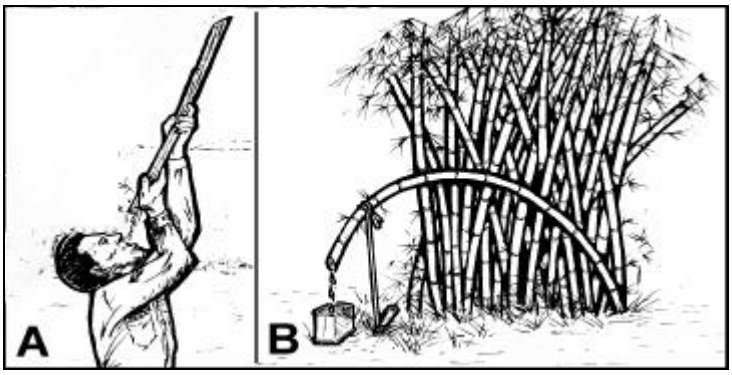

Figure VII-5 A and B. Water Vines and Green Bamboo

CAUTION: Liquid contained in green coconuts (**ripe** coconuts may cause diarrhea).

•Beach well. Along the coast, obtain water by digging a beach well **(Figure VII-6)**.

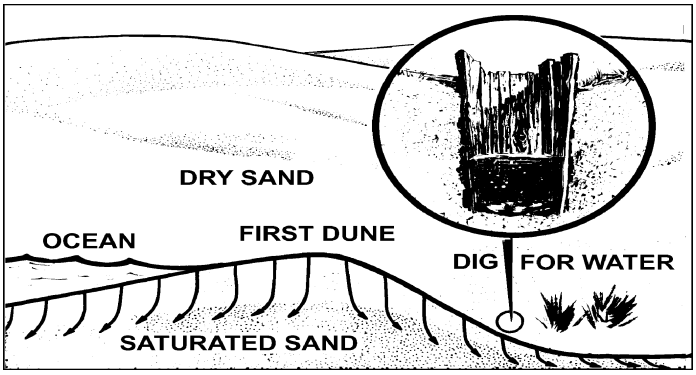

Figure VII-6. Beach Well

(8) Dry areas.
   (a) Solar still **(Figure VII-7)**.
   (b) Vegetation bag **(Figure VII-8)**.

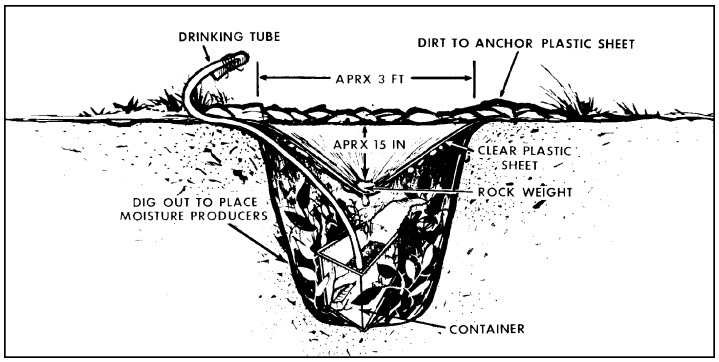

Figure VII-7. Solar Still

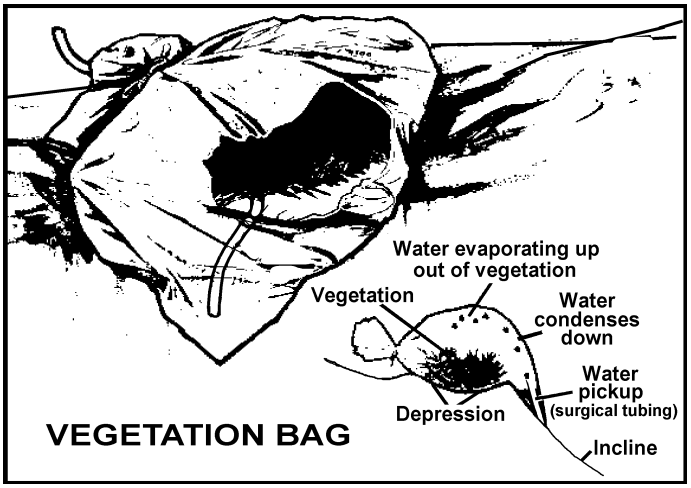

Figure VII-8. Vegetation Bag

   (c) Transpiration bag **(Figure VII-9)**.
   - Water bag must be clear.
   - Water will taste like the plant smells.

(d) Seepage basin **(Figure VII-10)**.

CAUTION: ***DO NOT*** use poisonous/toxic plants in vegetation/ transpiration bags.

Figure VII-9. Transpiration Bag

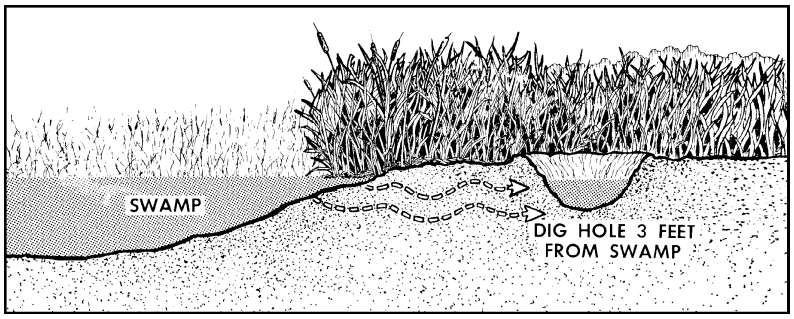

Figure VII-10. Seepage Basin

3. Water Preparation and Storage

a. Filtration. Filter through porous material (sand/charcoal).

b. Purification.

(1) Water from live plants requires no further treatment.

(2) Purify all other water.

(a) Boil at least 1 minute.

(b) Pour from one container to another to improve taste to aerate.

(c) Water purification tablets. Follow instructions on package.

c. Potable Water.

(1) If water cannot be purified, obtain water from a clear, cold, clean, and fast running source (if possible).

(2) Put in clear container and expose to the sun's ultraviolet rays to kill bacteria.

d. Storage. To prevent contamination, use a clean, covered or sealed container.

(1) Trash bag.

(2) Prophylactic.

(3) Section of bamboo.

(4) Flotation gear.

Chapter VIII

FOOD

1. Food Procurement

a. Sources and location.

(1) Mammals can be found where—

(a) Trails lead to watering, feeding, and bedding areas.

(b) Droppings or tracks look fresh.

(2) Birds can be found by—

(a) Observing the direction of flight in the early morning and late afternoon (leads to feeding, watering, and roosting areas).

(b) Listening for bird noises (indication of nesting areas

(3) Fish and other marine life locations **(Figure VIII-1)**.

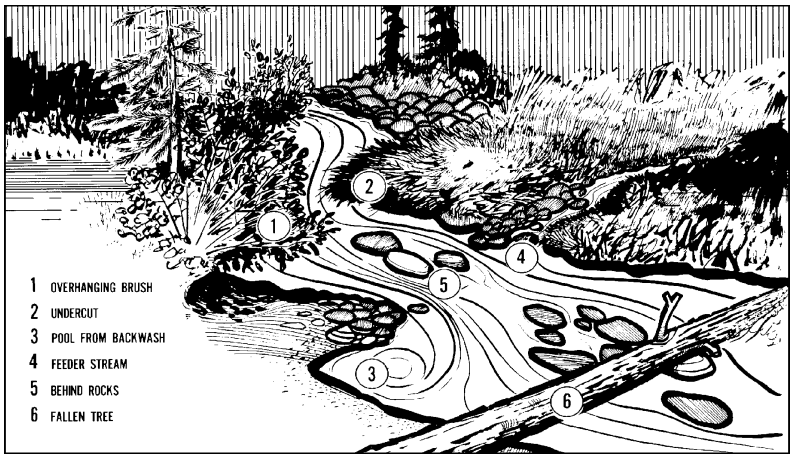

Figure VIII-1. Fishing Locations

(4) Reptiles and amphibians are found almost worldwide.

(5) Insects are found—

(a) In dead logs and stumps.

(b) At ant and termite mounds.

(c) On ponds, lakes, and slow moving streams.

b. Procurement techniques.

(1) Snares—

(a) Work while unattended.

(b) Location:

- Trails leading to water, feeding, and bedding areas.
- Mouth of dens **(Figure VIII-2)**.

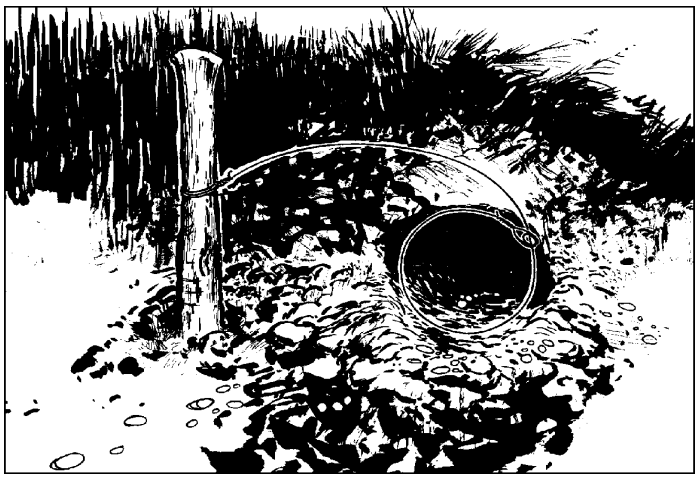

Figure VIII-2. Snare Placement

(c) Construction of simple loop snare.

- Use materials that will not break under the strain of holding an animal.
- Use a figure 8 (locking loop) if wire is used **(Figure VIII-3)**.
- Once tightened, the wire locks in place, preventing reopening, and the animal's escape.
- To construct a squirrel pole **(Figure VIII-4)** use simple loop snares.
- Make noose opening slightly larger than the animal's head **(3-finger** width for squirrels, **fist-sized** for rabbits**)**.

(d) Placement of snares (set as many as possible).

- Avoid disturbing the area.
- Use funneling (natural or improvised) **(Figure VIII-5)**.

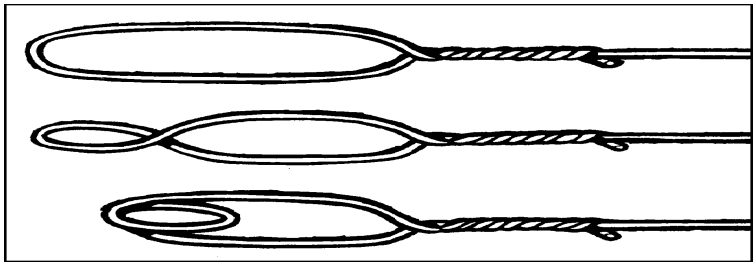

Figure VIII-3. Locking Loop

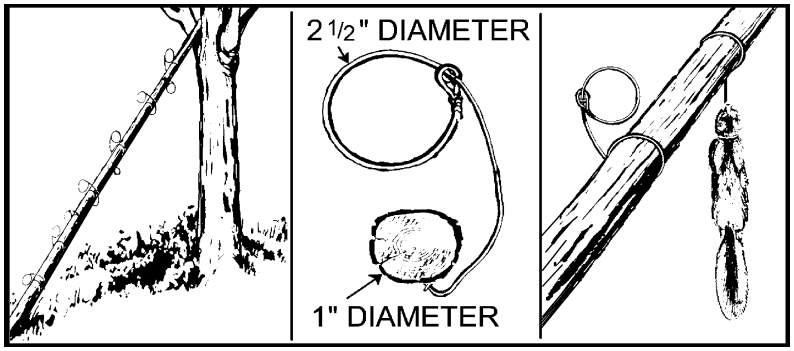

Figure VIII-4. Squirrel Pole

Figure VIII-5. Funneling

(2) Noose stick (easier and safer to use than the hands).
(3) Twist stick **(Figure VIII-6)**.
(a) Insert forked stick into a den until something soft is met.
(b) Twist the stick, binding the animal's hide in the fork.
(c) Remove the animal from the den.
(d) Be ready to **kill** the animal; **it may be dangerous**.

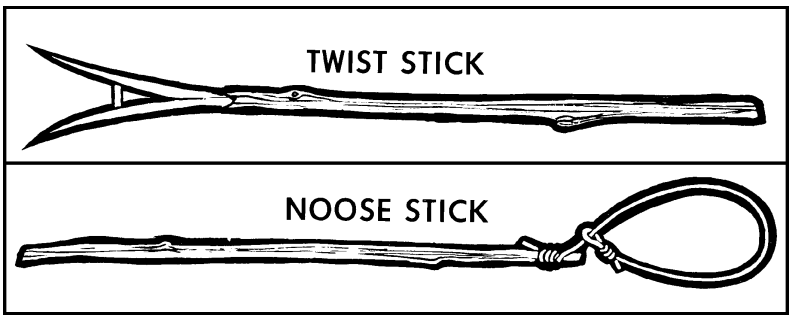

Figure VIII-6. Procurement Devices

(4) Hunting and fishing devices. (See **Figure VIII-7** for fishing procurement methods.)
(a) Club or rock.
(b) Spear.
(c) Slingshot.
(d) Pole, line, and hook.
(e) Net.
(f) Trap.

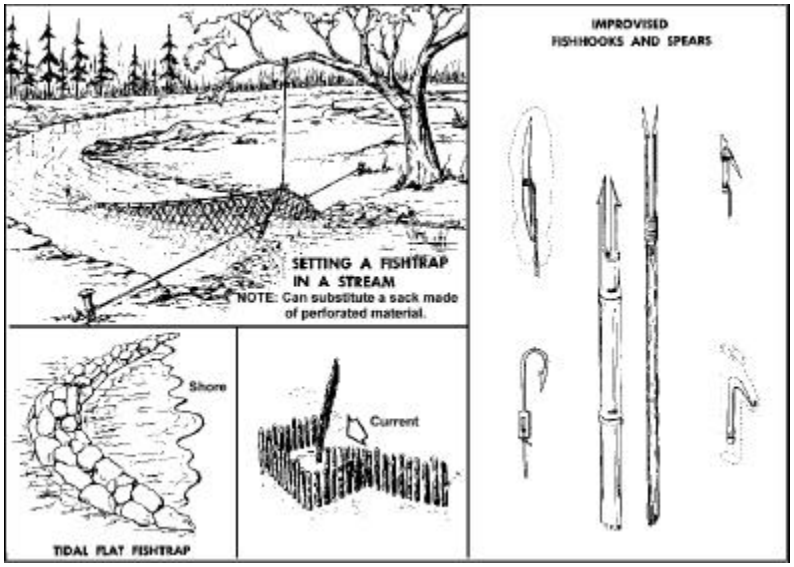

Figure VIII-7. Procurement Methods

(5) Precautions:

(a) Wear shoes to protect the feet when wading in water.

(b) Avoid reaching into dark holes.

(c) **Kill** animals before handling. Animals in distress may attract the enemy.

(d) ***DO NOT*** secure fishing lines to yourself or the raft.

(e) **Kill** fish before bringing them into the raft.

(f) ***DO NOT*** eat fish with—

- Spines.
- Unpleasant odor.
- Pale, slimy gills.
- Sunken eyes.
- Flabby skin.
- Flesh that remains dented when pressed.

(g) ***DO NOT*** eat fish eggs or liver (entrails).

(h) Avoid all crustaceans above the high tide mark.

(i) Avoid cone-shaped shells **(Figure VIII-8)**.

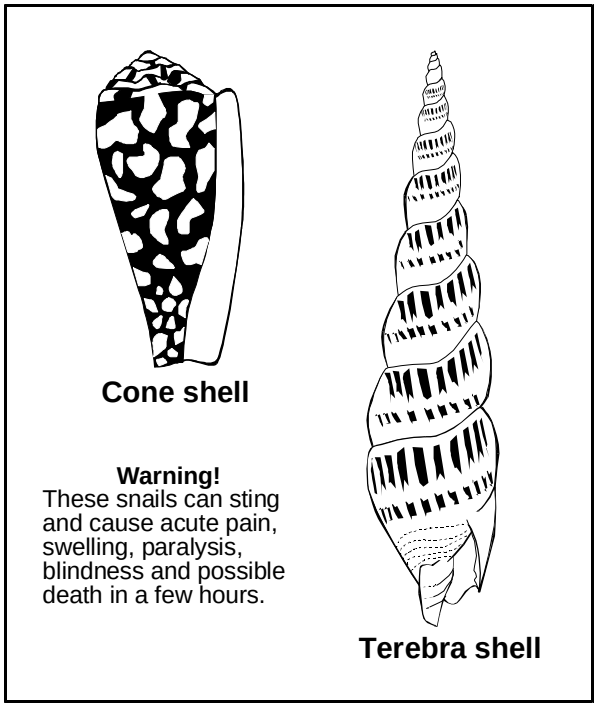
Cone shell
Warning!
These snails can sting and cause acute pain, swelling, paralysis, blindness and possible death in a few hours.
Terebra shell

Figure VIII-8. Cone-Shaped Shells of Venomous Snails

(j) Avoid hairy insects; the hairs could cause irritation or infection.

(k) Avoid poisonous insects, for example:
- Centipedes.
- Scorpions.
- Poisonous spiders.

(l) Avoid disease carrying insects, such as—
- Flies.
- Mosquitoes.
- Ticks.

c. Plant Foods. ***Before using the following guide use your evasion chart to identify edible plants:***

Note: If you cannot positively identify an edible plant and choose to try an unknown plant, these guidelines may help determine edibility.

(1) Selection criteria.

(a) Before testing for edibility, ensure there are enough plants to make testing worth your time and effort. Each part of a plant (roots, leaves, stems, bark, etc.) requires more than 24 hours to test. ***DO NOT*** waste time testing a plant that is not abundant.

(b) Test only **1** part of **1** plant at a time.

(c) Remember that eating large portions of plant food on an empty stomach may cause diarrhea, nausea, or cramps. ***Two*** good examples are ***green apples*** and ***wild onions***. Even after testing food and finding it safe, eat in moderation.

(2) Avoid plants with the following characteristics:

Note: Using these guidelines in selecting plants for food may eliminate some edible plants; however, these guidelines will help prevent choosing potentially toxic plants.

(a) Milky sap (dandelion has milky sap but is safe to eat and easily recognizable).

(b) Spines, fine hairs, and thorns (skin irritants/contact dermatitis). ***Prickly pear*** and ***thistles*** are exceptions. ***Bracken fern fiddleheads*** also violate this guideline.

(c) Mushrooms and fungus.

(d) Umbrella shaped flowers (hemlock is eliminated).

(e) Bulbs (***only*** onions smell like onions).

(f) Grain heads with pink, purplish, or black spurs.

(g) Beans, bulbs, or seeds inside pods.

(h) Old or wilted leaves.

(i) Plants with shiny leaves.

(j) White and yellow berries. (Aggregate berries such as black and dewberries are always edible, test all others before eating.)

(k) Almond scent in woody parts and leaves.

d. Test procedures.

CAUTION: Test all parts of the plant for edibility. Some plants have both edible and inedible parts. **NEVER ASSUME** a part that proved edible when cooked is edible raw, test the part raw before eating. The same part or plant may produce varying reactions in different individuals.

(1) Test only **1** part of a plant at a time.

(2) Separate the plant into its basic components (stems, roots, buds, and flowers).

(3) Smell the food for strong acid odors. Remember, smell alone does not indicate a plant is edible or inedible.

(4) ***DO NOT*** eat 8 hours before the test and drink only purified water.

(5) During the 8 hours you abstain from eating, test for contact poisoning by placing a piece of the plant on the inside of your elbow or wrist. The sap or juice should contact the skin. Usually 15 minutes is enough time to allow for a reaction.

(6) During testing, take ***NOTHING*** by mouth **EXCEPT** purified water and the plant you are testing.

(7) Select a small portion of a single part and prepare it the way you plan to eat it.

(8) Before placing the prepared plant in your mouth, touch a small portion (a pinch) to the outer surface of your lip to test for burning or itching.

(9) If after 3 minutes there is no reaction on your lip, place the plant on your tongue and hold it for 15 minutes.

(10) If there is no reaction, thoroughly chew a pinch and hold it in your mouth for 15 minutes **(*DO NOT* SWALLOW)**. If any ill effects occur, rinse out your mouth with water.

(11) If nothing abnormal occurs, swallow the food and wait 8 hours. If **any ill effects** occur during this period, **induce** vomiting and drink a water and charcoal mixture.

(12) If no ill effects occur, eat **¼ cup** of the same plant prepared the same way. Wait another 8 hours. If no ill effects occur, the plant part as prepared is safe for eating.

CAUTION:
1. Ripe tropical fruits should be peeled and eaten raw. Softness, rather than color, is the best indicator of ripeness. Cook unripe fruits and discard seeds and skin.
2. Cook underground portions when possible to reduce bacterial contamination and ease digestion of their generally high starch content.
3. During evasion, you may not be able to cook. Concentrate your efforts on leafy green plants, ripe fruits, and above ground ripe vegetables not requiring significant preparation.

2. Food Preparation

Animal food gives the greatest food value per pound.

a. Butchering and skinning.

(1) Mammals.

(a) Remove the skin and save for other uses.

(a) One cut skinning of small game **(Figure VIII-9)**.

- Open the abdominal cavity.
- Avoid rupturing the intestines.
- Remove the intestines.
- Save inner organs (heart, liver, and kidneys) and all meaty parts of the skull, brain, tongue, and eyes.

(b) Wash when ready to use.

(c) If preserving the meat, remove it from the bones.

(d) Unused or inedible organs and entrails may be used as bait for other game.

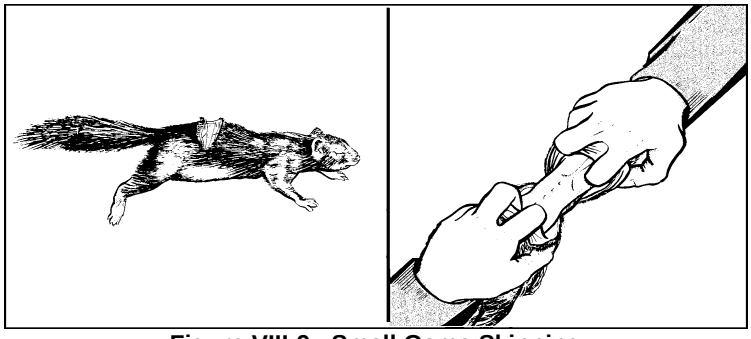

Figure VIII-9. Small Game Skinning

(2) Frogs and snakes.
(a) Skin.
(b) Discard skin, head with 2 inches of body, and internal organs.
(3) Fish.
(a) Scale (if necessary) and gut fish soon after it is caught.
(b) Insert knifepoint into anus of fish and cut open the belly.
(c) Remove entrails.
(d) Remove gills to prevent spoilage.
(4) Birds.
(a) Gut soon after killing.
(b) Protect from flies.
(c) Skin or pluck them.
(d) Skin scavengers and sea birds.
(5) Insects.
(a) Remove all hard portions such as the legs of grasshoppers or crickets. (The rest is edible.)
(b) Recommend cooking grasshopper-size insects.

CAUTION: Dead insects spoil rapidly, ***DO NOT*** save.

(6) Fruits, berries, and most nuts can be eaten raw.

b. Cooking.

CAUTION: To kill parasites, thoroughly cook all wild game, freshwater fish, clams, mussels, snails, crawfish, and scavenger birds. Saltwater fish may be eaten raw.

(1) Boiling (most nutritious method of cooking—drink the broth).
(a) Make metal cooking containers from ration cans.
(b) Drop heated rocks into containers to boil water or cook food.
(2) Baking.
(a) Wrap in leaves or pack in mud.
(b) Bury food in dirt under coals of fire.

(3) Leaching. Some nuts (acorns) must be leached to remove the bitter taste of tannin. Use one of the following leaching methods:

(a) First method:

- Soaking and pouring the water off.
- Crushing and pouring water through. Cold water should be tried first; however, boiling water is sometimes best.
- Discarding water.

(b) Second method:

- Boil, pour off water, and taste the plant.
- If bitter, repeat process until palatable.

(4) Roasting.

(a) Shake shelled nuts in a container with hot coals.

(b) Roast thinly sliced meat and insects over a candle.

3. Food Preservation

b. Keeping an animal alive.

c. Refrigerating.

(1) Long term.

(a) Food buried in snow maintains a temperature of approximately 32 degrees F.

(b) Frozen food will not decompose (freeze in meal-size portions).

(2) Short term.

(a) Food wrapped in waterproof material and placed in a stream remains cool in summer months.

(b) Earth below the surface, particularly in shady areas or along streams, is cooler than the surface.

(c) Wrap food in absorbent material such as cotton and re-wet as the water evaporates.

c. Drying and smoking removes moisture and preserves food.

(1) Use salt to improve flavor and promote drying.

(2) Cut or pound meat into thin strips.

(3) Remove fat.

(4) ***DO NOT*** use pitch woods such as fir or pine; they produce soot giving the meat an undesirable taste.

d. Protecting meat from animals and insects.
    (1) Wrapping food.
        (a) Use clean material.
        (b) Wrap pieces individually.
        (c) Ensure all corners of the wrapping are insect proof.
        (d) Wrap soft fruits and berries in leaves or moss.
    (2) Hanging meat.
        (a) Hang meat in the shade.
        (b) Cover during daylight hours to protect from insects.
    (3) Packing meat on the trail.
        (a) Wrap before flies appear in the morning.
        (b) Place meat in fabric or clothing for insulation.
        (c) Place meat inside the pack for carrying. Soft material acts as insulation helping keep the meat cool.
        (d) Carry shellfish, crabs, and shrimp in wet seaweed.

e. ***DO NOT*** store food in the shelter; it attracts unwanted animals.

Chapter IX

INDUCED CONDITIONS

(NUCLEAR, BIOLOGICAL, AND CHEMICAL CONSIDERATIONS)

1. Nuclear Conditions

CAUTION: Radiation protection depends on time of exposure, distance from the source, and shielding.

a. Protection.

(1) **FIND PROTECTIVE SHELTER IMMEDIATELY!**

(2) Gather all equipment for survival (time permitting).

(3) Avoid detection and capture.

(a) Seek existing shelter that may be improved **(Figure IX-1)**.

Figure IX-1. Immediate Action Shelter

(b) If no shelter is available, dig a trench or foxhole as follows:

- Dig trench deep enough for protection, then enlarge for comfort **(Figure IX-2)**.
- Cover with available material.

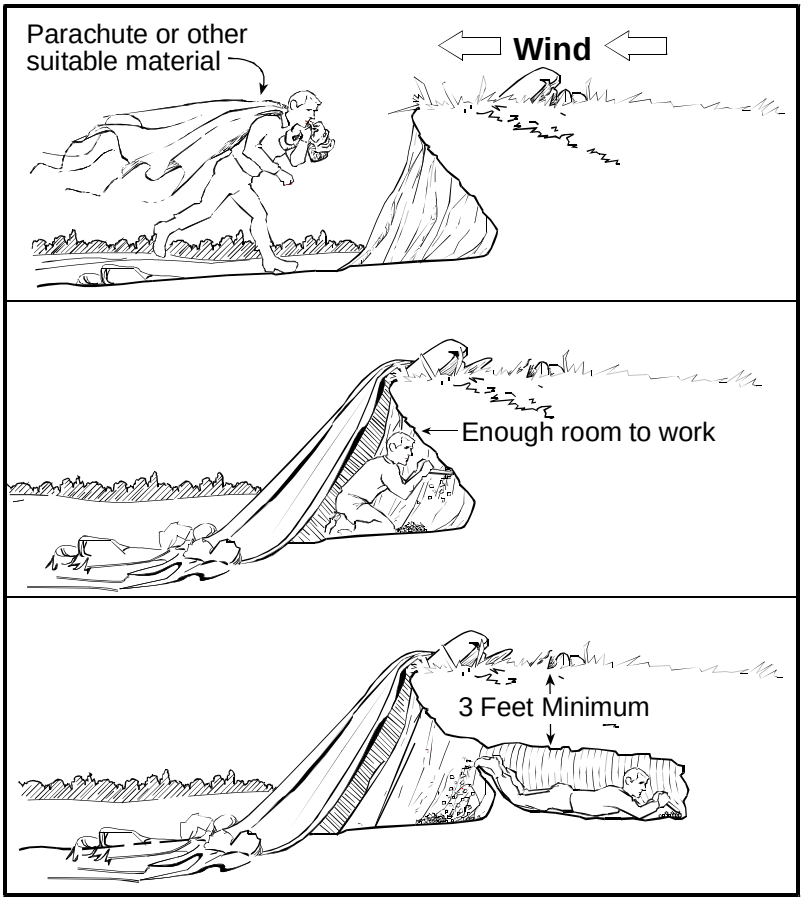

Figure IX-2. Improvised Shelter

(4) Radiation shielding efficiencies **(Figure IX-3)**.

NUCLEAR EXPLOSIONS: Fall flat. Cover exposed body parts. Present minimal profile to direction of blast. ***DO NOT*** *look at fireball!* Remain prone until blast effects are over.

SHELTER: Pick, as soon as possible, 5 minutes unsheltered is maximum!

Priority:
(1) Cave or tunnel covered with 3 or more feet of earth.
(2) Storm/storage cellars
(3) Culverts.
(4) Basements.
(5) Abandoned stone/mud buildings.
(6) Foxhole 4 feet deep (remove topsoil within 2 feet radius of foxhole lip).

RADIATION SHIELDING EFFICIENCIES

Iron/Steel	.7 inches	**Cinder Block**	5.3 inches
Brick	2.0 inches	**Ice**	6.8 inches
Concrete	2.2 inches	**Wood (Soft)**	8.8 inches
Earth	3.3 inches	**Snow**	20.3 inches

One thickness reduces received radiation dose by 1/2. Additional thickness added to any amount of thickness reduces received radiation dose by 1/2.

SHELTER SURVIVAL: Keep contaminated materials out of shelter.
Good Weather: Bury contaminated clothing outside of shelter (recover later).
Bad Weather: Shake strongly or beat with branches. Rinse and /or shake wet clothing. ***DO NOT*** *wring out!*

PERSONAL HYGIENE: Wash entire body with soap and *any* water; give close attention to fingernails and hairy parts.
No Water: Wipe all exposed skin surfaces with clean cloth or uncontaminated soil. Fallout/dusty conditions--keep entire body covered. Keep handkerchief/cloth over mouth and nose. Improvise goggles. ***DO NOT*** *smoke!*

DAILY RADIATION TIME TABLE for NO RATE METER

4-6	Complete isolation	**9-12**	2-4 hours exposure per day
3-7	Brief exposure (30 minutes maximum)	**13**	Normal movement.
8	Brief exposure (1 hour maximum)		

Figure IX-3. Radiation Shielding Efficiencies

(5) Leave contaminated equipment and clothing near shelter for retrieval after radioactive decay.

(6) Lie down, keep warm, sleep, and rest.

b. Substance:

(1) Water. Allow no more than 30 minutes exposure on **3d** day for water procurement.

(a) Water sources (in order of preference):

- Springs, wells, or underground sources are **safest**.
- Water in pipes/containers in abandoned buildings.
- Snow (**6** or **more inches below** the surface during the fallout).

- Streams and rivers (filtered before drinking).
- Lakes, ponds, pools, etc.
- Water from below the surface (***DO NOT*** stir up the water).
- Use a seep well.

(b) Water preparation **(Figures IX-4 and IX-5)**.

- Filtering through earth removes 99 percent of radioactivity.
- Purify all water sources.

(2) Food.

(a) Processed foods (canned or packaged) are preferred; wash and wipe containers before use.

(b) Animal foods.

- Avoid animals that appear to be sick or dying.
- Skin carefully to avoid contaminating the meat.
- Before cooking, cut meat away from the bone, leaving at least 1/8 inch of meat on the bone.
- Discard all internal organs.
- Cook all meat until **very well** done.

(c) Avoid.

- Aquatic food sources (use only in extreme emergencies because of high concentration of radiation).
- Shells of all eggs (contents will be safe to eat).
- Milk from animals.

(d) Plant foods (in order of preference).

- Plants whose edible portions grow underground (for example, potatoes, turnips, carrots, etc.). Wash and remove skin.
- Edible portions growing above ground that can be washed and peeled or skinned (bananas, apples, etc.).
- Smooth skinned vegetables, fruits, or above ground plants that are not easily peeled or washed.

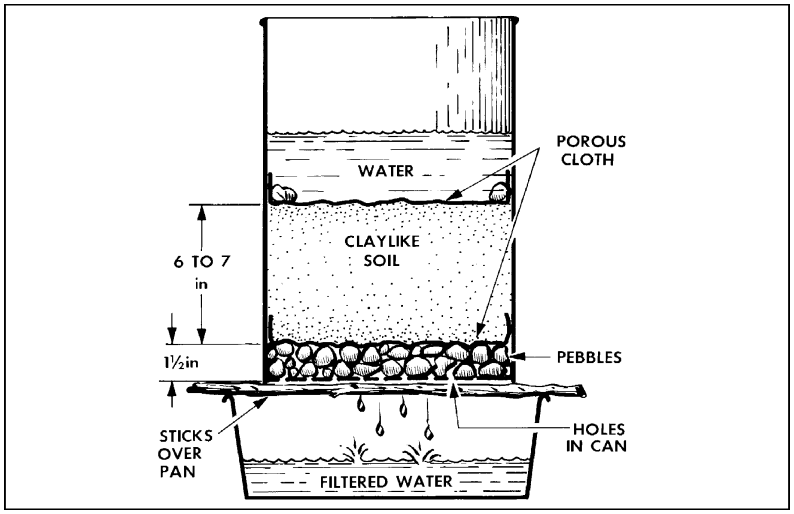

Figure IX-4. Filtration Systems, Filtering Water

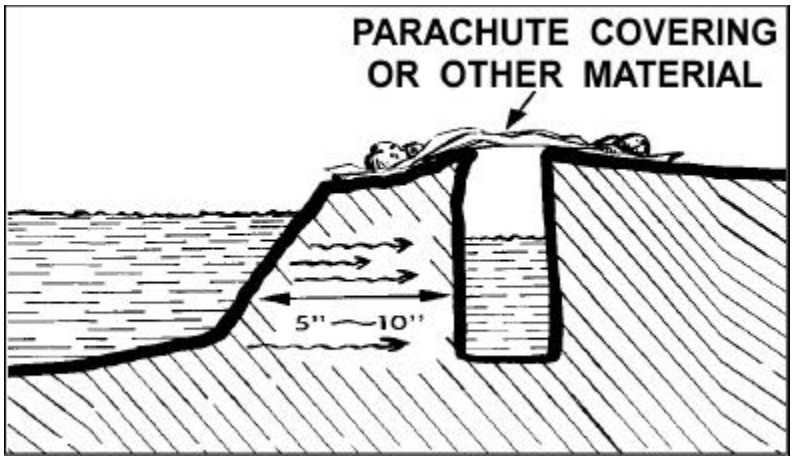

Figure IX-5. Filtration Systems, Settling Water

c. Self-aid:
(1) General rules:
(a) Prevent exposure to contaminants.
(b) Use personal hygiene practices and remove body waste from shelter.
(c) Rest, avoid fatigue.
(d) Drink liquids.
(2) Wounds.
(a) Clean affected area.
(b) Use antibacterial ointment or cleaning solution.
(c) Cover with clean dressing.
(d) Watch for signs of infection.
(3) Burns.
(a) Clean affected area.
(b) Cover with clean dressing.
(4) Radiation sickness (nausea, weakness, fatigue, vomiting, diarrhea, loss of hair, radiation burns).
(a) Time is required to overcome.
(b) Rest.
(c) Drink fluids.
(d) Maintain food intake.
(e) Prevent additional exposure.

2. Biological Conditions

a. Clues which may alert you to a biological attack follow:
(1) Enemy aircraft dropping objects or spraying.
(2) Breakable containers or unusual bombs, particularly those bursting with little or no blast, and muffled explosions.
(3) Smoke or mist of unknown origin.
(4) Unusual substances on the ground or vegetation; sick looking plants or crops.
b. Protection from biological agents follow:
(1) Use protective equipment.
(2) Bathe as soon as the situation permits.
(3) Wash hair and body thoroughly with soap and water.
(4) Clean thoroughly under fingernails.
(5) Clean teeth, gums, tongue, and roof of mouth frequently.

c. Survival tips for biological conditions follow:

(1) Keep your body and living area clean.

(2) Stay alert for clues of biological attack.

(3) Keep nose, mouth, and skin covered.

(4) Keep food and water protected. Bottled or canned foods are safe if sealed. If in doubt, boil food and water for 10 minutes.

(5) Construct shelter in a clear area, away from vegetation, with entrance 90 degrees to the prevailing wind.

(6) If traveling, travel crosswind or upwind (taking advantage of terrain to stay away from depressions).

3. Chemical Conditions

a. Detecting.

(1) Smell. Many agents have little or no odor.

(2) Sight. Many agents are colorless:

(a) Color. Yellow, orange, or red smoke or mist.

(b) Liquid. Oily, dark patches on leaves, ground, etc.

(c) Gas. Some agents appear as a mist immediately after shell burst.

(d) Solid. Most solid state agents have some color.

(3) Sound. Muffled explosions are possible indications of chemical agent bombs.

(4) Feel. Irritation to the nose, eyes, or skin and/or moisture on the skin are danger signs.

(5) Taste. Strange taste in food or water indicates contamination.

(6) General indications. Tears, difficult breathing, choking, itching, coughing, dizziness.

(7) Wildlife. Presence of sick or dying animals.

b. Protection against chemical agents follows:

(1) Use protective equipment.

(2) Avoid contaminated areas.

(a) Exit contaminated area by moving crosswind.

(b) Select routes on high ground.

(c) Avoid cellars, ditches, trenches, gullies, valleys, etc.

(d) Avoid woods, tall grasses, and bushes as they tend to hold chemical agent vapors.

(e) Decontaminate body and equipment as soon as possible by—

- Removing. Pinch-blotting.
- Neutralizing. Warm water.
- Destroying. Burying.

c. Self-aid in chemically contaminated areas.

(1) If a chemical defense ensemble is available—

(a) Use all protective equipment.

(b) Follow antidote directions when needed.

(2) If a chemical defense ensemble is not available—

(a) Remove or tear away contaminated clothing.

(b) Rinse contaminated areas with water.

(c) Improvise a breathing filter using materials available (T-shirt, handkerchief, fabric, etc.).

d. Tips for the survivor:

(1) ***DO NOT*** use wood from a contaminated area for fire.

(2) Look for signs of chemical agents around water sources before procurement (oil spots, foreign odors, dead fish, or animals).

(3) Keep food and water protected.

(4) ***DO NOT*** use plants for food or water in contaminated areas.

Appendix A

THE WILL TO SURVIVE

ARTICLE VI CODE OF CONDUCT

I will never forget that I am an American fighting for freedom, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

1. Psychology of Survival

a. Preparation—

(1) Know your capabilities and limitations.
(2) Keep a positive attitude.
(3) Develop a realistic plan.
(4) Anticipate fears.
(5) Combat psychological stress by—

(a) Recognizing and anticipating existing *stressors* (injury, death, fatigue, illness, environment, hunger, isolation).

(b) Attributing normal reactions to existing *stressors* (fear, anxiety, guilt, boredom, depression, anger).

(c) Identifying signals of distress created by *stressors* (indecision, withdrawal, forgetfulness, carelessness, and propensity to make mistakes).

b. Strengthen your will to survive with—

(1) The Code of Conduct.
(2) Pledge of Allegiance.
(3) Faith in America.
(4) Patriotic songs.
(5) Thoughts of return to family and friends.

c. Group dynamics of survival include—

(1) Leadership, good organization, and cohesiveness promote high morale:

(a) Preventing panic.
(b) Creating strength and trust in one another.
(c) Favoring persistency in overcoming failure.
(d) Facilitating formulation of group goals.

(2) Taking care of your buddy.
(3) Working as a team.
(4) Reassuring and encouraging each other.

(5) Influencing factors are—
(a) Enforcing the chain of command.
(b) Organizing according to individual capabilities.
(c) Accepting suggestions and criticism.

2. Spiritual Considerations

a. Collect your thoughts and emotions.
b. Identify your personal beliefs.
c. Use self-control.
d. Meditate.
e. Remember past inner sources to help you overcome adversity.
f. Pray for your God's help, strength, wisdom, and rescue.
(1) Talk to your God.
(2) Give thanks that God is with you.
(3) Ask for God's help.
(4) Pray for protection and a positive outcome.
g. Remember scripture, verses, or hymns; repeat them to yourself and to your God.
h. Worship without aid of written scripture, clergy, or others.
i. Forgive—
(1) Yourself for what you have done or said that was wrong.
(2) Those who have failed you.
j. Praise God and give thanks because—
(1) God is bigger than your circumstances.
(2) God will see you through (no matter what happens).
(3) Hope comes from a belief in heaven and/or an after-life.
k. Trust.
(1) Faith and trust in your God.
(2) Love for family and self.
(3) Never lose hope.
(4) Never give up.
l. With other survivors—
(1) Identify or appoint a religious lay leader.
(2) Discuss what is important to you.
(3) Share scriptures and songs.
(4) Pray for each other.
(5) Try to have worship services.

(6) Write down scriptures and songs that you remember.

(7) Encourage each other while waiting for rescue, remember—

(a) Your God loves you.

(b) Praise your God.

Appendix B
Publication Information

1. Scope

This UNCLASSIFIED multiservice tactics, techniques, and procedures publication is designed to assist Service members in a survival situation regardless of geographic location.

2. Purpose

This publication provides Service members a quick reference, weatherproof, pocket-sized guide on basic survival, evasion, and recovery information.

3. Application

The target audience for this publication is any Service member requiring basic survival, evasion, and recovery information.

4. Implementation Plan

Participating Service command offices of primary responsibility (OPRs) will review this publication, validate the information, and reference and incorporate it in Service and command manuals, regulations, and curricula as follows:

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5. User Information

a. The TRADOC-MCCDC-NWDC-AFDC Air Land Sea Application (ALSA) Center developed this publication with the joint participation of the approving Service commands. ALSA will review and update this publication as necessary.

b. This publication reflects current joint and Service doctrine, command and control (C2) organizations, facilities, personnel, responsibilities, and procedures. Changes in Service protocol, appropriately reflected in joint and Service publications, will likewise be incorporated in revisions to this document.

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SURVIVAL, EVASION, AND RECOVERY

MULTI-SERVICE TACTICS, TECHNIQUES, AND PROCEDURES FOR SURVIVAL, EVASION, AND RECOVERY

FM 3-50.3
NTTP 3-50.3
AFTTP(I) 3-2.26

MARCH 2007

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MULTI-SERVICE TACTICS, TECHNIQUES, AND PROCEDURES

FOREWORD

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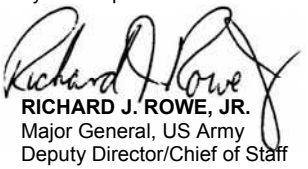

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QUICK REFERENCE CHECKLIST
FIVE PHASES OF EVASION

1. Immediate Actions—THINK BEFORE YOU ACT!

a. Assess immediate situation.

b. Assess medical condition; treat as necessary (chapter V).

c. Take action to protect from chemical, biological, radiological, and nuclear hazards (chapter IX).

d. Gather equipment; move to initial hole-up/hide site.

e. Make initial radio contact in accordance with (IAW) combat search and rescue/special instructions (CSAR/SPINS).

f. Sanitize uniform of compromising information.

g. Sanitize area; hide equipment you decide to leave.

h. Apply initial personal camouflage.

2. Initial Movement

a. Move in the direction of your evasion plan of action (EPA), if possible.

b. Attempt to break line of sight from your initial isolating area and move uphill if possible.

c. Move out of area, zigzag pattern recommended.

d. Use terrain and concealment to your advantage.

e. Move to hole-up/hide site.

3. Hole-Up/Hide Site

a. Select hole-up/hide site that provides:

(1) Concealment from ground and air searches.

(2) Safe distance from enemy positions and lines of communications (LOCs).

(3) Listening and observation points.

(4) Multiple avenues of escape.

(5) Protection from environment.

(6) Communications/signaling.

b. Be prepared to authenticate IAW CSAR/SPINS.

c. Establish radio contact IAW CSAR/SPINS. (Communications/signaling devices may compromise position.)

d. Drink water; treat injuries for long term.

e. Evaluate combat needs.

f. Inventory equipment.

g. Review and execute your EPA.

h. Determine specific location.

i. Improve camouflage.

j. Stay alert, maintain security, and be flexible.

4. Evasion Movement (Chapters I and II)

a. Travel slowly and deliberately. (You are more at risk during movement.)

b. Do not leave evidence of travel.

c. Use noise and light discipline.

d. Stay away from LOCs.

e. Stop, look, listen, and smell.

f. Move from one point of concealment to another point of concealment.

g. Use evasion movement techniques (chapter I).

5. Recovery (Chapters III and IV)

a. Prepare for conventional or unconventional recovery.

b. Select best area and prepare for use of communications and signaling devices.

c. Prepare to transmit position (range and bearing).

d. Select site(s) IAW criteria in theater recovery plans.

e. Observe/report enemy activity and hazards.

f. Secure equipment.

g. Stay concealed until recovery is imminent.

h. Be prepared to authenticate via DD Form 1833, Isolated Personnel Report (ISOPREP) card.

i. During recovery:

(1) Follow recovery force instructions.

(2) Secure weapon.

(3) Assume non-threatening posture.

(4) Beware of rotors/propellers.

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NTTP 3-50.3
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FM 3-50.3 US Army Training and Doctrine Command
Fort Monroe, Virginia
NTTP 3-50.3 Navy Warfare Development Command
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Maxwell Air Force Base, Alabama

20 March 2007

SURVIVAL, EVASION, AND RECOVERY

MULTI-SERVICE TACTICS, TECHNIQUES, AND PROCEDURES FOR SURVIVAL, EVASION, AND RECOVERY

TABLE OF CONTENTS

Page

QUICK REFERENCE CHECKLIST i

CHAPTER I EVASION I-1
Planning I-1
Camouflage I-1
Shelters I-3
Movement I-3

CHAPTER II NAVIGATION II-1
Stay or Move Considerations II-1
Determine Navigation and Position II-2
Travel Considerations II-9
River Travel II-9
Ice and Snow Travel II-9

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Mountain Hazards II-11
Dry Climates II-11
Tropical Climates II-11
Open Seas II-12

CHAPTER III **RADIO COMMUNICATION AND SIGNALING III-1**
Radio Communications (Voice and Data) III-1
Signaling III-2

CHAPTER IV **RECOVERY IV-1**
Responsibilities IV-1
Initial Actions IV-1
Actions on the Ground/in the Water IV-1
Site Selection IV-2
Prepare for Recovery IV-2
Communicate with Recovery Force IV-2
General Principles of Recovery IV-3
Unassisted Recovery IV-3
Assisted Recovery IV-5

CHAPTER V **SURVIVAL MEDICINE V-1**
Immediate First Aid Actions V-1
Common Injuries and Illnesses V-5
Plant Medicine V-9
Health and Hygiene V-12
Rules for Avoiding Illness V-12

CHAPTER VI **PERSONAL PROTECTION VI-1**
Priorities VI-1
Care and Use of Clothing VI-1
Other Protective Equipment VI-2
Shelters VI-3
Fires VI-8

CHAPTER VII **WATER VII-1**
Water Requirements VII-1
Signs and Symptoms of Dehydration VII-1
Water Procurement VII-1
Water Preparation and Storage VII-7

CHAPTER VIII **FOOD VIII-9**
Food Requirements VIII-9
Food Preparation VIII-15

Food Preservation VIII-17

CHAPTER IX **INDUCED CONDITIONS IX-1**
Nuclear Conditions IX-1
Biological Conditions IX-6
Chemical Conditions IX-6

APPENDICES
A. The Will to Survive A-1
B. Publication Information B-1

GLOSSARY **..... Glossary-1**

FIGURES

Figure I-1. Camouflage Patterns I-2
Figure II-1. Stick and Shadow Method to Determine North/South Line.....II-2
Figure II-2. Wristwatch Method to Determine North/South Line II-3
Figure II-3. Celestial Aids (Stars) Method to Determine North/South Line.....II-3
Figure II-4. Map Orientation with a Dial or Needle Compass.....II-4
Figure II-5. Map Orientation with a Compass Rose II-5
Figure II-6. Triangulation II-6
Figure II-7. Setting the Compass for Night Navigation II-7
Figure II-8. Dogleg and 90-Degree Offset.....II-8
Figure II-9. Improvised Snowshoes II-10
Figure III-1. Radio Transmission Characteristics.....III-1
Figure III-2. Size and Ratio.....III-3
Figure III-3. Signal Key.....III-3
Figure IV-1. Rescue Strap..... IV-4
Figure IV-2. Forest Penetrator..... IV-4
Figure IV-3. Fixed Loop..... IV-5
Figure V-1. Open Airway..... V-1

Figure V-2. Combat-Application-Tourniquet V-2
Figure V-3. QuickClot V-3
Figure V-4. Useful Plants.....V-11
Figure VI-1. Improvised Foot Wear.....VI-2
Figure VI-2. Sun and Snow Goggles VI-3
Figure VI-3. Gaiters VI-3
Figure VI-4. Immediate Shelters VI-4
Figure VI-5. Thermal A-Frame.....VI-5
Figure VI-6. Snow Trench.....VI-5
Figure VI-7. Snow Cave VI-6
Figure VI-8. Poncho/Parachute Shade Shelter.....VI-7
Figure VI-9. Elevated Platform Shelter VI-7
Figure VI-10. Shingle Method VI-8
Figure VI-11. Tepee Fire and Log Cabin Fire.....VI-9
Figure VI-12. Sod Fire and Reflector VI-10
Figure VI-13. Dakota Fire Hole VI-10
Figure VII-1. Water Procurement.....VII-2
Figure VII-2. Water Indicators.....VII-3
Figure VII-3. Banana Plants.....VII-4
Figure VII-4. Water Vines VII-5
Figure VII-5. Beach Well.....VII-5
Figure VII-6. Transpiration Bag.....VII-6
Figure VII-7. Vegetation Bag VII-6
Figure VII-8. Seepage Basin.....VII-7
Figure VIII-1. Snare Placement VIII-9
Figure VIII-2. Locking Loop.....VIII-10
Figure VIII-3. Squirrel Pole VIII-10
Figure VIII-4. Funneling VIII-11
Figure VIII-5. Procurement Devices.....VIII-12
Figure VIII-6. Procurement Methods.....VIII-12
Figure VIII-7. Small Game Skinning VIII-16
Figure IX-1. Immediate Action Shelter.....IX-1
Figure IX-2. Improvised Shelter IX-2
Figure IX-3. Radiation Shielding Efficiencies IX-3
Figure IX-4. Filtration Systems, Filtering Water IX-4
Figure IX-5. Filtration Systems, Settling Water IX-4

Chapter I
EVASION

1,000 days of evasion are better than one day of captivity.

1. Planning

a. Review the quick reference checklist at the front of this publication.

b. Follow these guidelines for successful evasion:

(1) Keep a positive attitude.

(2) Use established procedures.

(3) Follow your EPA.

(4) Maintain radio discipline.

(5) Be patient.

(6) Drink water (**DO NOT** eat food without water).

(7) Conserve strength for critical periods.

(8) Rest and sleep as much as possible.

(9) Stay out of sight.

c. Avoid food, perfumes, or any other odors that may stand out and give you away.

d. Mask scent using natural materials such as dirt or vegetation.

e. Determine where to go IAW theater recovery plans:

(1) Near a suitable area for recovery.

(2) Selected area for evasion.

(3) Neutral or friendly country or area.

(4) Designated area for recovery.

2. Camouflage

a. Basic principles:

(1) Disturb the area as little as possible.

(2) Avoid activity that reveals movement to the enemy.

(3) Apply personal camouflage.

b. Camouflage patterns should match environment (figure I-1):

(1) Face. Use dark colors on high spots and light colors on any remaining exposed areas. Use a hat, netting, or mask if available.

(2) Ears. The insides and the backs should have two colors to break up outlines if not covered.

(3) Head, Neck, Hands, and Under Chin. Use scarf, collar, vegetation, netting, or coloration methods.

(4) Light-colored Hair / No Hair. Give special attention to conceal with a scarf or mosquito head net.

Figure I-1. Camouflage Patterns

c. Position and movement camouflage:

(1) Avoid unnecessary movement.

(2) Take advantage of natural concealment:

(a) Cut foliage fades and wilts; change regularly.

(b) Change camouflage depending on the surroundings.

(c) DO NOT select all vegetation from same source.

(d) Use stains from grasses, berries, dirt, and charcoal.

(3) DO NOT overcamouflage.

(4) Remember when using shadows, they shift with the sun.

(5) Never expose shiny objects (i.e., watches, glasses, pens, boots).

(6) Ensure watch alarms and hourly chimes are turned off.

(7) Remove unit patches, name tags, rank insignia, and so forth.

(8) Break up the outline of the body—"V" of crotch/armpits, head/shoulders.

(9) Observe from a prone and concealed position.

3. Shelters

a. Use camouflage and concealment.

b. Locate carefully—remember the acronym: BLISS.

c. Choose an area with observable approach and escape routes.

B – Blend (blend with environment).
L – Low silhouette (smaller than surroundings).
I – Irregular shape (natural looking).
S – Small (enough for you and your gear).
S – Secluded location (least likely to be searched).

d. Use brush, ridges, ditches, and rocks to keep from forming paths to hole-up/hide site.

e. Be wary of natural hazards such as flash floods in ravines and canyons.

f. Conceal with minimal to no preparation.

g. Ensure overhead concealment.

h. Attempt to return the area to its original state before you start your movement.

4. Movement

a. A moving object is easy to spot. If travel is necessary:

(1) Mask with natural cover.

(2) Stay off ridgelines, use the "military crest" (2/3 of the way up) of a hill.

(3) Restrict to periods of low light, bad weather, wind, or reduced enemy activity.

(4) Avoid silhouetting.

(5) At irregular intervals:

(a) **STOP** at a point of concealment.

(b) **LOOK, LISTEN, and SMELL** for signs of human or animal activity. Watch for trip wires or booby traps and avoid leaving evidence of travel. Peripheral vision is more effective for recognizing movement at night and twilight.

b. Camouflage evidence of travel. Route selection requires detailed planning and special techniques (irregular route/zigzag).

c. Concealing evidence of travel:

(1) **DO NOT** break branches, leaves, or grass. Use a walking stick to part vegetation and push it back to its original position.

(2) **DO NOT** grab small trees or brush. (This may scuff the bark or create movement that is easily spotted. In snow country, this creates a path of snowless vegetation.

(3) Pick firm footing. **TRY NOT TO:**

(a) Overturn ground cover, rocks, and sticks.

(b) Scuff bark on logs and sticks.

(c) Make noise by breaking sticks. (Cloth wrapped around feet helps muffle noise.)

(d) Mangle grass and bushes that normally spring back.

(4) Mask unavoidable tracks in soft footing:

(a) Place tracks in the shadows of vegetation, downed logs, and snowdrifts.

(b) Move before and during precipitation; allows tracks to fill in.

(c) Travel during windy periods.

(d) Take advantage of solid surfaces leaving less evidence of travel.

(e) Tie cloth or vegetation to feet or brush / pat out tracks lightly to speed their breakdown or make them look old.

(5) Secure trash and loose equipment; hide or bury discarded items.

(6) If pursued by dogs, concentrate on defeating the handler.

(a) Travel downwind of dog/handler, if possible.

(b) Travel over rough terrain and/or through dense vegetation to slow the handler.

(c) Travel downstream through fast moving water.

(d) Zigzag route if possible; consider loop-backs and “J” hooks.

d. Penetrate obstacles as follows:

(1) Enter deep ditches feet first to avoid injury.

(2) Go around chain-link and wire fences. Go under fence if unavoidable, crossing at damaged areas. DO NOT touch fence; look for electrical insulators or security devices.

(3) Penetrate rail fences, passing under or between lower rails. If this is impractical, go over the top, presenting as low a silhouette as possible.

(4) Cross roads after observation from concealment to determine enemy activity. Cross at points offering concealment such as bushes, shadows, or bend in road. Cross in a manner leaving footprints parallel to the road (do this by stepping sideways).

(5) Use same method of observation for railroad tracks as used for roads. Then, lower your body to the ground aligning parallel to the tracks with face down. Cross the tracks using a semi-pushup motion moving sideways.

Warning: If there are three rails, one may be electrified.

e. Urban considerations:

(1) Look for and move to “friendly” controlled location or stronghold point.

(2) Avoid movement into market-type areas and crowds.

(3) Avoid high rise buildings.

(4) Head to concealment to break visual contact.

(5) If seen, change direction radically.

(6) Use caution when passing windows and doors; try to avoid.

(7) Use cloth, rags, clothing, and other man-made material to blend in.

(8) Conceal movement utilizing buildings, rubble, and other structures.

(9) Observe structures for movement or life threatening obstacles.

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Chapter II
NAVIGATION

Assess the threat and apply appropriate evasion principles.

1. Stay or Move Considerations

a. Leave only when:

(1) Dictated by the threat.

(2) Certain of your location and your destination and you are able to get there.

(3) Able to reach water, food, shelter, and/or help.

(4) Convinced rescue is not coming.

b. If you decide to move:

(1) Follow your EPA.

(2) Determine which direction to travel and why.

(3) Decide what equipment to take, cache, or destroy.

(4) It is usually better to move at night because of the concealment darkness offers. Exceptions to such movement would be when moving through hazardous terrain or dense vegetation (e.g., jungle or mountainous terrain). Stop movement with sufficient time to find concealment and shelter prior to sunrise.

c. Avoid compromising information when using a map in a combat environment:

(1) **DO NOT** write on the map.

(2) **DO NOT** soil the map by touching the destination.

(3) **DO NOT** fold in a manner providing travel information.

d. Considerations for non-combat:

(1) Stay in place (e.g., with vehicle).

(2) If you do not stay in place, leave information at your starting point that includes:

(a) Destination and route of travel.

(b) Personal condition.

(c) Supplies available.

2. Determine Navigation and Position

a. Determine general location.

Note: Determine best guess direction based on previous knowledge when navigating without a map, global positioning system (GPS), or compass (e.g., movement is east toward the border).

(1) Develop working knowledge of operational area.

(a) Geographic checkpoints.

(b) Man-made checkpoints.

(c) Previous knowledge of operational area.

(2) Use formula: Rate x Time = Distance.

(3) Use information provided in map legend.

(4) Use prominent landmarks.

(5) Visualize map to determine position.

b. Determine cardinal directions (north, south, east, and west).

(1) Use compass.

(2) Use stick and shadow method to determine a true north/south line (figure II-1).

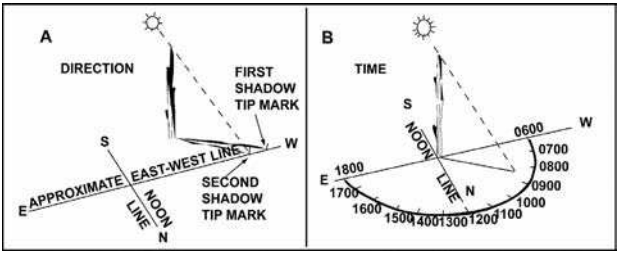

Figure II-1. Stick and Shadow Method to Determine North/South Line

(3) Remember the sunrise/moonrise is in the east and sunset/moonset is in the west.

(4) Use wristwatch to determine general cardinal direction, if current local time is known (figure II-2). With digital watches, visualize a clock face on the watch.

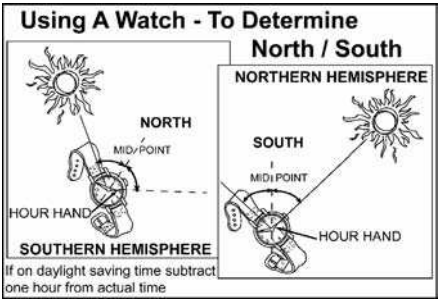

Figure II-2. Wristwatch Method to Determine North/South Line

(5) Use stars (figure II-3).

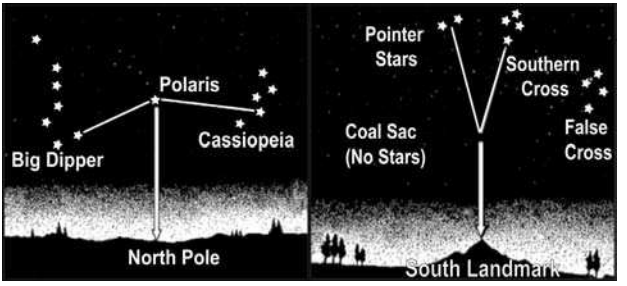

Figure II-3. Celestial Aids (Stars) Method to Determine North/South Line

c. To orient the map:

(1) Use a true north-south line (figure II-4).

(a) Unfold map and place on firm, flat, level nonmetallic surface.

(b) Align compass on true north-south line.

(c) Rotate map and compass until stationary index line aligns with the magnetic variation indicated in marginal information.

- Easterly (subtract variation from 360 degrees).
- Westerly (add variation to 360 degrees).

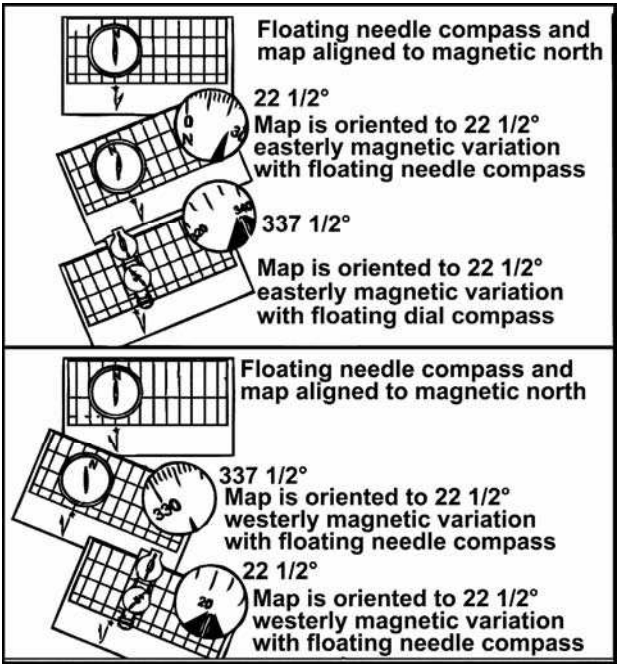
Floating needle compass and map aligned to magnetic north
22 1/2°
Map is oriented to 22 1/2° easterly magnetic variation with floating needle compass
337 1/2°
Map is oriented to 22 1/2° easterly magnetic variation with floating dial compass
Floating needle compass and map aligned to magnetic north
337 1/2°
Map is oriented to 22 1/2° westerly magnetic variation with floating needle compass
22 1/2°
Map is oriented to 22 1/2° westerly magnetic variation with floating needle compass

Figure II-4. Map Orientation with a Dial or Needle Compass

(2) Use a compass rose (figure II-5).

(a) Place edge of the compass on magnetic north line of the compass rose closest to your location.

(b) Rotate map and compass until compass reads 360 degrees.

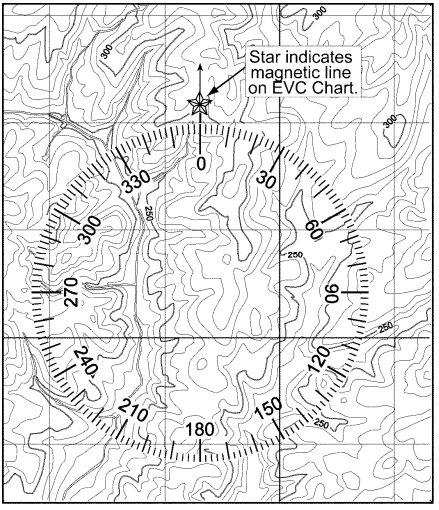

Figure II-5. Map Orientation with a Compass Rose

(3) If there is **NO** compass, orient map using cardinal direction, obtained by the stick and shadow method or the celestial aids (stars) method.

d. Determine specific location (be prepared to give coordinates and datum to rescue forces if asked).

(1) Using GPS and map.

(a) More sky = better accuracy and quicker position acquisition.

(b) More frequent position fixes = shorter time to acquire next position.

(c) Watch for jamming and interference. GPS satellite signals are very susceptible to jamming and interference. Indications include:

- ***Continuous, one-directional "marching"***—receiver shows a continuous "marching" of latitude or longitude (for example the value continuously increases or decreases in a single direction).

- ***Obviously incorrect position data***—you know your rough position but your GPS receiver shows a location that is

significantly and obviously incorrect (for example you know you are in Iraq but your receiver shows 0 degrees latitude and 5 degrees longitude).

- ***"Jumping" position data*** —receiver position jumps between significantly different positions (for example more than a tenth of a degree at a time).

- ***Unexpected loss of position lock***—receiver has good view of the sky and good power supply and is operating normally, but cannot maintain position lock or is unexpectedly knocked off a position lock.

(d) Protect against jamming and interference. Determine relative location of jamming and block jamming by using body/structure shielding from jamming signal, placing GPS receiver in a hole (16"x12") or building a wall (18"x14") between GPS receiver and jammer.

(e) Conserve GPS battery life.

(2) Triangulation (resection) with a compass (figure II-6).

(a) Try to use three or more azimuths (between 30 and 130 degrees apart).

(b) Positively identify a major land feature and determine a line of position (LOP).

(c) Check map orientation each time compass is used.

(d) Plot the LOP using a thin stick or blade of grass (combat) or pencil line (non-combat).

(e) Repeat steps (b) through (d) for other LOPs.

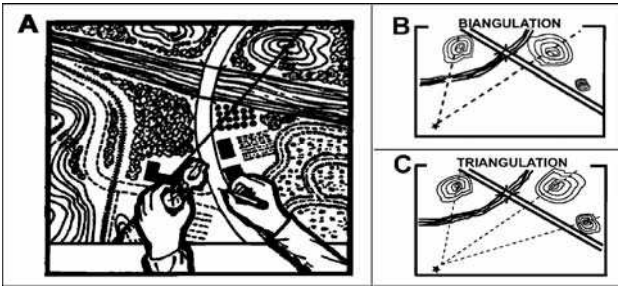

Figure II-6. Triangulation

e. Use the compass for night navigation by:

(1) Setting up compass for night navigation (figure II-7).

(2) Aligning north-seeking arrow with luminous line and follow front of compass.

(3) Using point-to-point navigation.

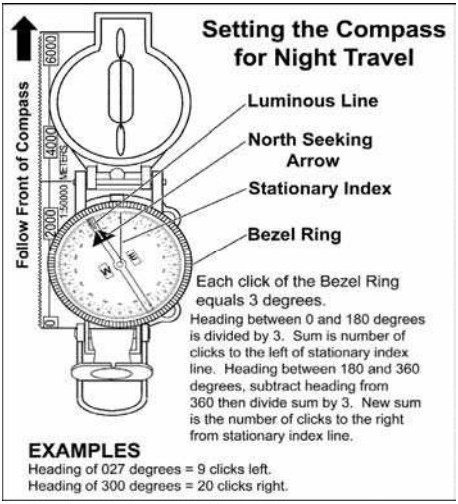
Setting the Compass for Night Travel
Follow Front of Compass
6000
4000
METERS
2000
0
Luminous Line
North Seeking Arrow
Stationary Index
Bezel Ring
Each click of the Bezel Ring equals 3 degrees.
Heading between 0 and 180 degrees is divided by 3. Sum is number of clicks to the left of stationary index line. Heading between 180 and 360 degrees, subtract heading from 360 then divide sum by 3. New sum is the number of clicks to the right from stationary index line.
EXAMPLES
Heading of 027 degrees = 9 clicks left.
Heading of 300 degrees = 20 clicks right.

Figure II-7. Setting the Compass for Night Navigation

f. Use route selection techniques:

(1) Circumnavigation.

(a) Find a prominent landmark on the opposite side of obstacle on current heading.

(b) Contour around obstacle to landmark.

(c) Resume your route of travel.

(2) Dogleg and 90-degree offset (figure II-8).

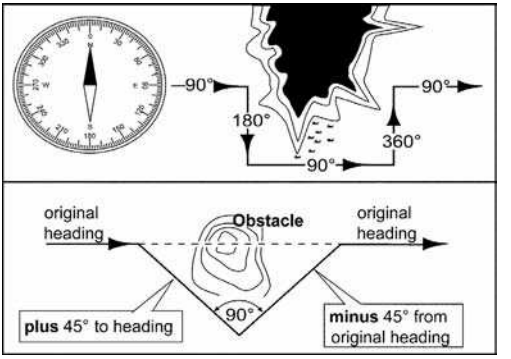

Figure II-8. Dogleg and 90-Degree Offset

(3) Straight-line heading:

(a) Maintain heading until reaching destination.

(b) Track number of paces traveled to monitor progress.

- One pace is the distance covered each time the same foot touches the ground.
- Distances measured by paces are approximate (for example: in open terrain, 65 paces per 100 meters [average]; in rough terrain or night, 90 to 100 paces per 100 meters).
- Keep track of your pace count (pebbles in pocket or knots in a string per 100 meters).

(c) Use pace count with terrain evaluation and heading to determine location. Individual pace varies because of factors such as steep terrain, day/night travel, or injured/uninjured condition. Adjust estimation of distance traveled against these factors to get relative accuracy when using a pace count.

(4) Deliberate offset:

(a) Use when finding a point on a linear feature (that is, road or river).

(b) Intentionally navigate to left or right of target so you know which way to turn at the linear feature.

(5) Point-to-point same as straight line:

(a) Pick out landmarks on the heading and walk the trail of least resistance to a point.

(b) On reaching a point, establish another landmark and continue.

3. Travel Considerations

a. Maintain a realistic pace.

b. Take rest stops when needed.

c. Avoid overdressing and overheating.

d. Consider food and water requirements.

e. Take special care of feet (change socks regularly).

f. Pack equipment to prevent loss, damage, pack imbalance, and personal safety.

g. Go around obstacles, not over or through them.

h. Avoid travel on trails, if possible.

i. Travel in forested areas, if possible.

j. Avoid creek bottoms and ravines with NO escape in the event of heavy rains.

k. Consider the following for swamps, lakes, and unfordable rivers:

(1) Circumnavigate swamps, lakes, and bogs, if possible.

(2) Travel downstream to find people and slower water.

(3) Travel upstream to find narrower and shallow water.

4. River Travel

River travel may be faster and save energy when hypothermia is not a factor. It may be a primary mode of travel and LOC in a tropical environment (use with caution if evading).

a. Use flotation device (such as raft, log, bamboo) when crossing rivers or large/deep streams.

b. Use a pole to move the raft in shallow water and an oar in deep water.

c. Keep near shore and stay near inside edge of river bends (current speed is less).

d. Use caution when traveling on rivers; avoid submerged objects, rapids, waterfalls, and hazardous animals.

5. Ice and Snow Travel

a. Use caution while traveling in blizzards, poor visibility, and bitterly cold winds.

b. Obstacles to winter travel include:

(1) Deep soft snow; if movement is necessary, make snowshoes (figure II-9). Travel is easier in early morning or late afternoon near dusk when snow is frozen or crusted.

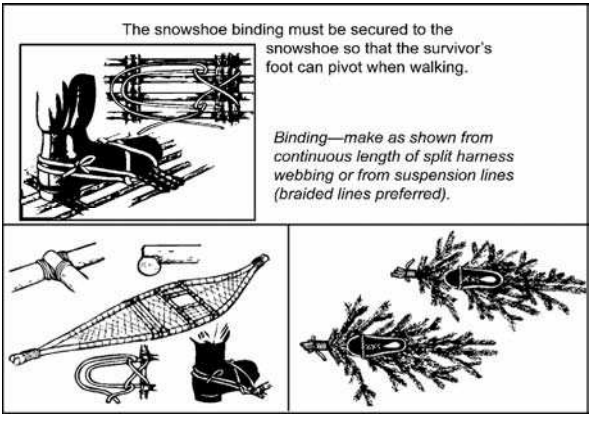
The snowshoe binding must be secured to the snowshoe so that the survivor's foot can pivot when walking.
Binding—make as shown from continuous length of split harness webbing or from suspension lines (braided lines preferred).

Figure II-9. Improvised Snowshoes

(2) Avoid avalanche prone areas:

(a) Slopes 25 to 60 degrees.

(b) Trees without uphill branches (identifies prior avalanches).

(c) Heavy snow loading on ridge tops.

(3) If caught in an avalanche:

(a) Move perpendicular to hillside.

(b) Use swimming motion to remain on or close to surface.

(c) Move hand around face to create air pocket as moving snow slows.

(4) Frozen water crossings.

(a) Weak ice should be expected where:

- Rivers are straight.
- Objects protrude through ice.
- Snow banks extend over ice.

- Rivers or streams come together.
- Water vapor rising indicates open or warm areas.
- Air pockets form when a frozen river loses volume.

(b) When crossing frozen water, distribute your weight by laying flat, belly crawling, or using snowshoes.

(c) Have long pole (to prevent total submersion) and knife or other pointed tools available to assist with self-recovery.

c. Glacier travel is hazardous and should be avoided because of unseen hazards.

6. Mountain Hazards

a. Lightning. Avoid ridge tops during thunderstorms.

b. Avalanche. Avoid areas prone to avalanches/falling rocks.

c. Flash Floods. Avoid creek bottoms, ravines, and wadis with no escape in the event of heavy rains.

7. Dry Climates

a. Consider remaining in place unless certain of reaching destination using water supply available.

b. Travel at night to avoid heat.

c. Stop movement with sufficient time to find concealment or construct shelter prior to sunrise.

d. In sand dune areas:

(1) Follow hard valley floor between dunes.

(2) Travel on the windward side of dune ridges.

e. If a sandstorm occurs:

(1) Mark direction of travel.

(2) Sit or lie down in direction of travel until storm passes.

(3) Try to get to the downwind side of natural shelter.

(4) Cover mouth and nose with piece of cloth.

(5) Protect eyes.

8. Tropical Climates

a. Hazardous terrain and vegetation may force travel during daylight.

b. Obstacles like thickets and swamps pose significant hazards, but may provide best evasion environment.

c. Part the vegetation to pass through. Avoid grabbing vegetation; it may have spines or thorns (use gloves if possible).

d. Go around logs when possible.

e. Trails are often located along waterways or mountain saddles. While traveling trails:

(1) Watch for disturbed areas on game trails; they may indicate a pitfall or trap.

(2) Use a walking stick to probe for pitfalls or traps.

(3) **DO NOT** sleep on the trail.

(4) Exercise caution, the enemy uses the trails also.

9. Open Seas

a. Raft Procedures. For all rafts, remember the five "A's." These are the first things you should do if you are the first person into the raft:

(1) Anchor—Ensure sea anchor is deployed so that when the anchor is on the top of a wave your raft is on the bottom of the wave or vice versa.

(2) Assistance—Assist others into the raft.

(3) Air—Ensure all chambers are inflated and all inflation valves are closed and equalization tube clamps are clamped off when fully inflated.

(4) Accessory Bag—Locate accessory bag.

(5) Assessment—Assess the situation and keep a positive mental attitude.

Note: Attach all equipment to raft or self.

b. Using currents to travel:

(1) Sea anchor may be closed to make use of existing currents.

(2) Sit low in the raft.

(3) Deflate the raft slightly so it rides lower in the water.

c. Using winds to travel:

(1) Pull in sea anchor.

(2) Inflate raft so it rides higher.

(3) Sit up in raft so body catches wind.

(4) Construct a shade cover/sail.

d. Making landfall. Indications of land include:

(1) Greenish tint in sky (tropics).

(2) Lighter colored reflection on clouds (open water causes dark gray reflections in arctic).

(3) Lighter colored water (indicates shallow water).

(4) Odors, sounds, and debris.

(5) Directional flights of birds at dawn (from shore) and at dusk (to shore).

e. Swimming ashore:

(1) Consider physical condition.

(2) Use a flotation aid.

(3) Secure all gear to body before reaching landfall.

(4) Remain in raft as long as possible.

(5) Use sidestroke or breaststroke to conserve strength if thrown from raft.

(6) Wear footgear and at least one layer of clothing.

(7) Try to make landfall during the lull between the sets of waves.

(8) In moderate surf:

(a) Swim forward on the back of a wave.

(b) Make shallow dive just before wave breaks to end ride.

(9) In high surf:

(a) Swim shoreward in trough between waves.

(b) When seaward wave approaches, face it and submerge.

(c) After it passes, work shoreward in next trough.

(10) If caught in undertow of large wave:

(a) Remain calm and swim to surface.

(b) Lie as close to surface as possible.

(c) Parallel shoreline and attempt landfall at point further down shore.

(11) Select landing point:

(a) Avoid places where waves explode upon rocks.

(b) Find place where waves smoothly rush onto rocks.

(12) After selecting a landing site:

(a) Face shoreward.

(b) Assume sitting position with feet 2 or 3 feet lower than head to absorb the shock of hitting submerged objects.

f. Rafting ashore:

(1) Select landing point carefully.

(2) Land on lee (downwind) side of islands or point of land, if possible.

(3) Head for gaps in surf line.

(4) Penetrate surf by:

(a) Taking down most shade/sails.

(b) Using paddles to maintain control.

(c) Deploying sea anchor for stability.

CAUTION: DO NOT deploy a sea anchor if traveling through coral.

g. Icebergs, small flows, and disintegrating flows are dangerous. Making sea ice landings on large stable ice flows:

(1) Use paddles to avoid sharp edges.

(2) Store raft away from ice edge.

(3) Keep raft inflated and ready for use.

(4) Weight down/secure raft so it does not blow away.

Chapter III
RADIO COMMUNICATIONS AND SIGNALING

Inventory and review the operating instructions of all communications and signaling equipment.

1. Radio Communications (Voice and Data)

a. Combat:

(1) Ensure personal locator beacon is off.

(2) Keep the beacon with you to supplement radio communications.

(3) Follow personnel recovery instructions in SPINS for on/off operations.

b. Make initial contact as soon as possible, or as directed in SPINS.

c. If no immediate contact, attempt contact again, as directed in SPINS.

d. Locate spare radio and batteries (keep warm and dry).

e. Transmissions (figure III-1):

(1) Use concealment sites that optimize line of site.

(2) Face recovery asset.

(3) Keep antenna perpendicular to intended receiver.

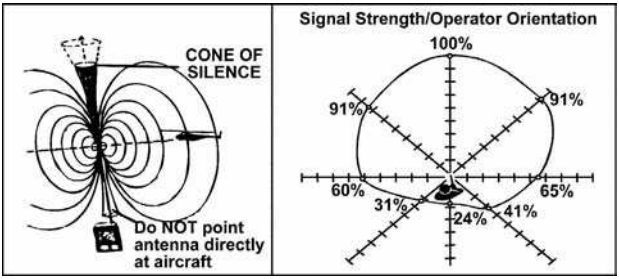

Figure III-1. Radio Transmission Characteristics

(4) DO NOT ground antenna (finger on antenna or attaching bolt, space blanket, and vegetation).

(5) Keep transmissions short (3 to 5 seconds) to avoid radio detection finding. Use data burst if available.

(6) Face the equator, if transmitting in the blind.

(7) Use terrain masking to hinder enemy direction finding.

(8) Do not use your radio at the same time for several days in a row.

f. Listening (use reception times in applicable plans/orders, or as directed by recovery forces).

g. Non-combat:

(1) Ensure locator beacon is operational.

(2) Follow standing plans for on/off operations to conserve battery use.

(3) Use alternate radio frequency if aircraft beacon is interfering with radio transmission.

2. Signaling

a. Pyrotechnic signals:

(1) Prepare early (weather permitting).

(2) Use as directed in applicable plans/orders, or as directed by recovery forces.

(3) If in a raft, extend downwind over the raft's edge before activating.

b. Strobe/infrared lights.

(1) Prepare early, consider filters and shields.

(2) Use as directed by recovery forces.

(3) Conserve battery life.

Note: May produce one residual flash when turned off.

c. Signal mirror (additional directions on back of survival mirror):

(1) Use as directed by recovery forces.

(2) If no radio, use only with confirmed friendly forces.

(3) Cover when not in use.

Note: Make a mirror from shiny metal or glass.

d. Pattern signals (use as directed).

(1) Materials:

(a) Man-made (space blanket, signal paulin, parachute).

(b) Natural, use materials that contrast the color and/or texture of the signaling area (rocks, brush, branches, stomped grass).

(2) Location:

(a) Maximize visibility from above.

(b) Provide concealment from ground observation.

(3) Size (large as possible) and ratio (figure III-2).

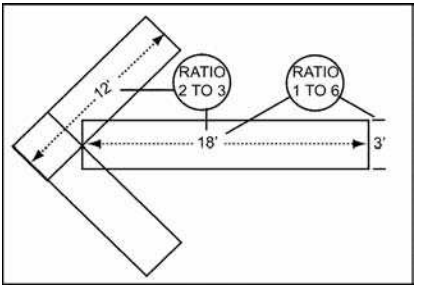

Figure III-2. Size and Ratio

(4) Shape (maintain straight lines and sharp corners).

(5) Contrasting colors.

(6) Height to create shadows.

(7) Pattern signals (figure III-3).

Number	Message	Code Symbol
1	Require assistance.	V
2	Require medical assistance.	X
3	No or negative.	N
4	Yes or affirmative.	Y
5	Proceed in this direction.	↑

Figure III-3. Signal Key

e. Sea dye marker.

(1) Dye dissipates quickly in rough seas or fast moving water.

(2) Sea dye is limited, use when recovery is likely.

(3) Conserve unused dye by rewrapping.

(4) May be used to color snow.

f. Non-combat considerations:

(1) Use a fire at night.

(2) Use smoke for day (tires or petroleum products for dark smoke and green vegetation for light smoke).

(3) Use signal mirror to sweep horizon.

(4) Use audio signals (voice, whistle, and weapons fire).

(5) Internationally recognized signal for distress is a series of three of anything (such as gunshots, lights, fires).

Chapter IV
RECOVERY

1. Responsibilities—YOUR EFFORTS ARE INSTRUMENTAL TO YOUR RECOVERY.

a. Prepare well ahead and prior to mission execution.

b. Construct an EPA and leave with vested authority. All missions require an EPA.

c. Consider all potential actions before execution.

d. Weigh potential cost-benefit of movement.

e. Weigh tactical/peacetime situation versus survival needs.

f. Follow EPA to best of ability.

g. Upon contact with recovery forces, follow instructions explicitly.

h. If applicable, be prepared to authenticate via DD Form 1833.

i. Be prepared for any form of recovery.

2. Initial Actions

a. Execute *"Mayday"* call using emergency frequency and/or follow air tasking order (ATO) SPINS.

b. Identify self/call-sign (e.g., "*Mayday/Mayday/ Mayday—any station/aircraft, this is Cowboy 02*").

c. Be prepared to provide position using the appropriate codes listed in the ATO, SPINS section for CSAR procedures.

d. Combat operations will require authentication when providing coordinates and datum.

e. Non-combat information can be provided in the clear:

(1) Call-sign/location/nature of emergency.

(2) State number of souls on board.

3. Actions on the Ground/in the Water

a. Prepare to communicate (see chapter III).

b. Organize/prepare communication devices.

c. Follow/establish communication plan (exception—opportune communication).

d. Establish head count, either physically or by radio if in command.

e. Determine threat—move as required.

f. Treat injures as required (see chapter V).

g. Retain/destroy classified material, as required.

h. Disable emergency locator transmitter (ELT)/turn off beacon (combat).

Note: If communication cannot be made, re-enable ELT/beacon (non-combat).

i. Establish location (preference is latitude/longitude, military grid reference system, and universal transverse mercator).

j. Inventory and retain all survival/recovery equipment until directed to do otherwise.

k. Follow EPA/move to appropriate recovery location (non-combat—remain in place; see chapter II).

4. Site Selection

a. Locate area for landing pick-up, if practical (approximately 150-feet diameter, free of obstructions, flat and level).

b. Assess evidence of human activity at/near site.

c. Locate several concealment sites around area.

d. Plan several tactical entry and exit routes.

e. Place prescribed visual signal/authentication.

f. Locate key terrain features for quick navigation or to assist recovery forces in finding your location.

5. Prepare for Recovery

a. Ensure equipment is packed and secure at all times.

b. Be prepared to move.

c. Prepare signaling devices (use as directed or as briefed).

d. Mentally review recovery methods (such as aircraft, ground, or boat).

6. Communicate with Recovery Force

a. Initiate contact.

Note: Once contact is made, follow recovery forces directions.

b. Be prepared to authenticate.

c. Switch frequencies as directed.

d. Be prepared to provide/update threat information.

e. Be prepared to provide medical condition.

f. Be prepared to describe location/key terrain features.

7. General Principles of Recovery

a. Assist recovery forces in identifying your position.

b. Stay concealed until recovery is imminent.

c. Assume non-threatening posture.

d. Secure weapons and avoid quick movement.

e. **DO NOT** approach recovery vehicle until instructed.

f. Beware of rotors/propellers when approaching recovery vehicle, especially on sloping or uneven terrain. Secure loose equipment that could be caught in rotors/propellers.

g. Use eye protection (glasses or helmet visor), if available.

8. Unassisted Recovery

a. For unassisted hoist recovery (figures IV-1 and IV-2):

(1) Allow metal on recovery device to contact surface before touching, to avoid injury from static discharge.

(2) Sit or kneel for stability while donning the recovery device.

(3) Put rescue strap under armpits; when using the forest penetrator, fold arms around it.

(4) **DO NOT** become entangled in cable, keep cable in front.

(5) Keep hands clear of all hardware and connectors.

(6) Use a vigorous thumbs up, vigorous cable shakes, or radio call to signal you are ready.

(7) Drag feet on ground to decrease oscillation.

(8) **DO NOT** assist during hoist or when pulled into rescue aircraft. Follow crewmember instructions.

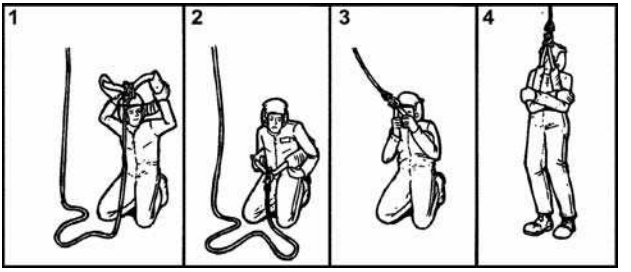

Figure IV-1. Rescue Strap

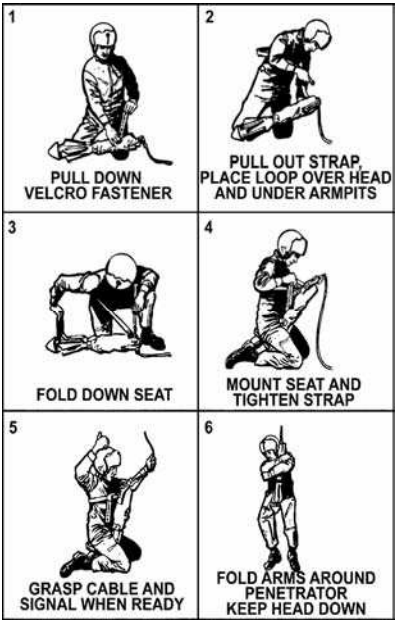

Figure IV-2. Forest Penetrator

b. For no-hoist recovery (rope or unfamiliar equipment).

(1) Create a “fixed loop” big enough to place under armpits keeping knot in front (figure IV-3).

(2) Be prepared to secure yourself to recovery device by any and all means available.

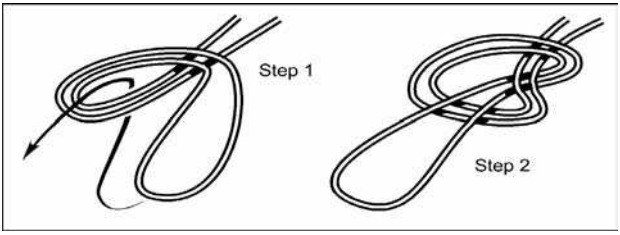

Figure IV-3. Fixed Loop

c. For water recovery—helicopter:

(1) Follow procedures for standard unassisted hoist procedures above.

(2) Take down canopy and secure all loose equipment (in the raft, in the accessory bag, or on person) prior to recovery. **REMAIN IN RAFT!**

(3) Deploy sea anchor and accessory kit.

(4) Add enough water to replace body weight to prevent raft from getting lifted into rotors.

(5) Secure yourself to raft until recovery device is in other hand.

d. For water recovery—surface vessel:

(1) Pull in sea anchor, accessory kit, or lines to prevent entanglement.

(2) Stay in raft until directed otherwise.

9. Assisted Recovery

a. Follow all instructions from recovery forces.

b. Remain in place until directed.

c. Make no threatening gestures/moves.

d. Retain all survival equipment until directed otherwise.

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Chapter V
SURVIVAL MEDICINE

1. Immediate First Aid Actions

Note: Following assessment and control of patient's airway, the next important step is to look for and control severe bleeding injuries.

a. Determine responsiveness.

(1) If unconscious, arouse by shaking gently and shouting.

(2) If no response:

(a) Keep head and neck aligned with body.

(b) Roll victim onto back.

(c) Airway: Open airway (figure V-1).

Note: If spinal injuries are suspected use the jaw thrust method (figure V-1).

(d) Breathing: Look, listen, and feel for air exchange for 3 to 5 seconds.

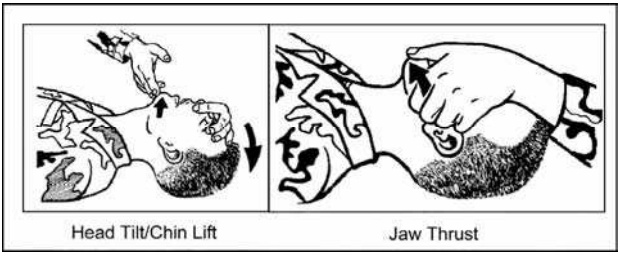

Figure V-1. Open Airway

(3) If victim is not breathing:

(a) Check for a clear airway; remove any blockage.

(b) Cover victim's mouth with your own.

(c) Pinch victim's nostrils closed.

(d) Fill victim's lungs with two slow breaths that last for 1 to 1.5 seconds.

(e) If breaths are blocked, reposition airway; try again.

(f) If still not breathing victim is beyond the scope of care.

(4) If victim is unconscious but breathing:

(a) Keep head and neck aligned with body.

(b) Roll victim on side (drains the mouth and prevents the tongue from blocking airway).

b. Stop bleeding using conventional methods (direct pressure,

CAUTION: Use a tourniquet when severe, uncontrolled bleeding will cause loss of life

elevation, pressure points).

(1) Wrap wound with compression bandage. If no compression bandage is available, hold pressure with gauze or available bandage.

(2) If bleeding is still uncontrolled with conventional methods, apply a Combat-Application-Tourniquet (figure V-2) or improvised tourniquet (a band at least 3 inches or wider is best) just above bleeding site on limb.

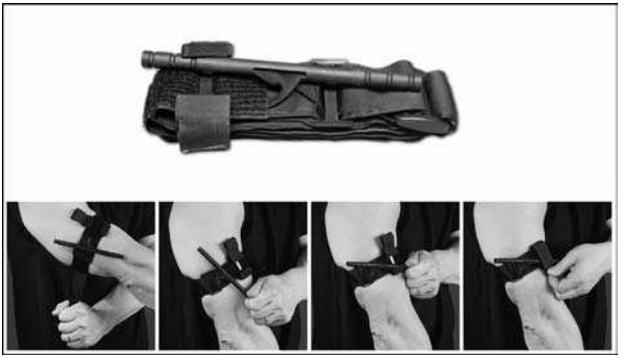

Figure V-2. Combat-Application-Tourniquet

(3) If bleeding continues after applying a tourniquet, apply QuikClot.

(a) Hold pack of QuikClot (figure V-3) away from your face and tear open.

(b) Remove pressure dressing and gauze from wound and wipe any excess pooled blood, preserving any clots in the wound if possible.

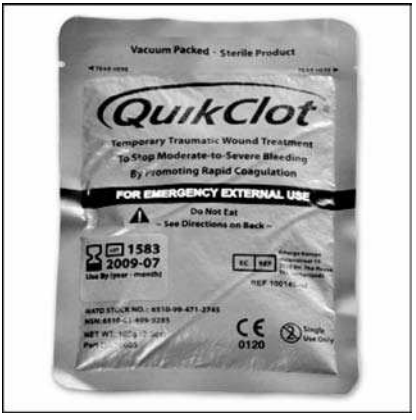

Figure V-3. QuikClot

CAUTION: When tactical situation allows, reassess tourniquet to determine if it should be replaced with direct pressure/dressing.

(4) Apply QuikClot.

(a) Slowly pour QuikClot directly into the wound until layer of tan granules is observed.

(b) Immediately wipe excess that falls onto surrounding tissue.

(c) Apply firm pressure to the wound with gauze roll.

(d) Only use enough QuikClot to stop the bleeding. Apply more QuikClot if bleeding does not stop.

(5) Reapply pressure.

(a) Pack wound with the gauze roll. Apply manual pressure for 3 minutes, and then apply a pressure dressing.

(b) If situation does not allow for manual pressure, apply pressure dressing directly over the roll of gauze.

c. Treat shock.

(1) Identify by one or more of the following:

(a) Pale, cool, and sweaty skin.

(b) Fast breathing and weak, fast pulse.

(c) Anxiety or mental confusion.

(d) Blood loss.

(2) Treat underlying injury.

(3) Maintain normal body temperature.

(a) Remove wet clothing.

(b) Give fluids.

- **DO NOT** give fluids to an unconscious victim.
- **DO NOT** give fluids if they cause victim to gag.

(c) Insulate from ground.

(d) Shelter from elements.

(4) Place conscious victim on side.

(a) Allow mouth to drain.

(b) Prevent tongue from blocking airway.

d. Treat chest injuries.

(1) Sucking Chest Wound. This occurs when chest wall is penetrated; may cause victim to gasp for breath; may cause sucking sound; may create bloody froth as air escapes chest.

(a) Expose wound and immediately seal wound with airtight material (e.g., candy wrapper, plastic bag, bandage wrapper, etc.).

(b) Monitor breathing and check dressing.

(c) If victim develops trouble breathing, lift side of dressing to allow trapped air to escape and immediately reseal.

(d) Position casualty on injured side or in a sitting position, whichever makes breathing easier.

(2) Fractured Ribs.

(a) Stabilize as follows:

- Place rolled-up clothing or bulky pad over site.
- Tape pad to site.
- **DO NOT** constrict breathing by taping ribs.

e. Treat fractures, sprains, and dislocations.

(1) Control bleeding.

(2) Remove watches, jewelry, and constrictive clothing.

(3) If fracture penetrates skin—apply dressing over wound.

(4) If no pulse below the break, attempt to straighten limb to restore circulation.

(5) Position limb as normally as possible.

(6) Splint in position in which found (if unable to straighten limb).

(7) Improvise a splint with available materials:

(a) Sticks or straight, stiff materials from equipment.

(b) Body parts (for example, opposite leg, arm to chest).

(8) Attach with strips of cloth at least 2-inches wide.

(9) Keep fractured bones from moving by immobilizing joints on both sides of the fracture. If fracture is in a joint, immobilize bones on both sides of joint.

Note: Splint fingers in a slightly flexed position, NOT in straight position.

(10) When resting, elevate injured area above heart level to reduce swelling.

(11) Check periodically for pulse/signs of circulation beyond the injury site.

(12) Loosen bandage or reapply splint if no pulse is felt or if swelling occurs because bandage is too tight.

2. Common Injuries and Illnesses

a. Burns:

(1) Flush burned skin for chemicals and irritants.

(2) Cool burned area with water.

(a) Use immersion or cool compresses.

(b) Avoid aggressive cooling with ice or frigid water.

(3) Remove watches, jewelry, constrictive clothing.

(4) Cover with dry sterile dressings.

(5) **DO NOT** use lotion or grease.

(6) Drink extra water to compensate for increased fluid loss from burns. (Add 1/4 teaspoon of salt and 1/4 teaspoon of sugar [if available] to each quart of water.)

(7) Change dressings when soaked or dirty.

b. Eye injuries.

(1) Sun/snow blindness (gritty, burning sensation, and possible reduction in vision caused by sun exposure):

(a) Prevent with improvised goggles (see chapter VI, figure VI-2).

(b) Treat by covering affected eye(s) with cool compress.

(2) Foreign body in eye:

(a) Irrigate with clean water from inside to outside corner of eye.

(b) If foreign body is not removed by irrigation, improvise a small swab. Moisten and wipe gently over affected area.

(c) If there is a foreign object in the eye – both eyes should be bandaged.

c. Heat injury.

(1) Heat cramps (cramps in legs or abdomen):

(a) Rest in cool or shady area.

(b) Slowly sip one quart of water. Add 1/4 teaspoon of salt per quart.

(2) Heat exhaustion (pale, sweating, moist, cool skin):

(a) Rest in shade.

(b) Slowly sip one quart of water.

(c) Protect from further heat exposure.

(3) Heat stroke, victim disoriented or unconscious, skin is hot and flushed (sweating may or may not occur), fast pulse:

(a) Cool as rapidly as possible (saturate clothing with water and fan victim). Remember to cool the groin and armpit areas. Cooling may be facilitated by pouring water on the head and back of neck (avoid overcooling).

(b) Maintain airway, breathing, and circulation.

d. Cold injuries.

(1) Frostbite:

(a) Signs and symptoms.

- Ears, nose, fingers, and toes are affected first.

- Areas will feel cold and may tingle leading to numbness that progresses to a waxy appearance with stiff skin that cannot glide freely over a joint.

(b) Re-warm areas with body heat.

(2) Hypothermia [fumble, mumble, stumble].

(a) It is a progressive injury.

- Intense shivering.
- Altered mental state, difficulty speaking.
- Impaired ability to perform complex tasks.
- Muscular rigidity with blue, puffy skin; jerky movements.
- Coma, respiratory and cardiac failure.

(b) Protect victim as follows:

- Remove wet clothing and put on dry clothing.
- Prevent further heat loss.
- Cover top of head and back of neck.
- Insulate from above and below.
- Warm with blankets, sleeping bags, warm fluids, or shelter.
- Warm body core before extremities.
- Skin-to-skin contact.
- Place heat packs at groin, armpits, and around neck.
- Avoid causing burns to skin.

e. Skin tissue damage.

(1) Immersion injuries (skin becomes wrinkled):

(a) Avoid walking on affected feet.

CAUTION: Handle hypothermia victim gently. Avoid overly rapid re-warming, which may cause cardiac arrest. Re-warm victim with skin-to-skin contact by volunteer(s) inside a sleeping bag/shelter.

(b) Pat dry; **DO NOT** rub. Skin tissue will be sensitive.

(c) Dry socks and shoes. Keep feet protected.

(d) Loosen clothing and boots to improve circulation.

(e) Keep area dry, warm, and open to air.

(f) **DO NOT** apply creams or ointments.

(2) Saltwater sores:

(a) Change body positions frequently.

(b) Keep sores dry.

(c) Use antiseptic (if available).

(d) **DO NOT** open or squeeze sores.

f. Snakebite:

(1) Treat all snakebites as poisonous. Remove watches, rings, boots, and other constricting items on the affected limb.

(2) Minimize activity and limit movement to prevent spread of venom.

(3) **DO NOT** cut bite site; **DO NOT** use mouth to create suction.

(4) Clean bite with soap and water; cover with a dressing.

(5) Splint bitten extremity to prevent motion (constantly check circulation/swelling).

(6) Treat for shock.

(7) For conscious victims, force fluids.

g. Marine life.

(1) Stings:

(a) Flush wound with salt water (fresh water stimulates toxin release). Urine may be used to flush area in a survival situation.

(b) Remove jewelry and watches.

(c) Remove tentacles and gently scrape or shave skin.

(d) **DO NOT** rub area with sand.

(e) Treat for shock.

(2) Punctures:

(a) Cover with clean dressing.

(b) Treat for shock as needed.

h. Skin irritants (includes poison oak and poison ivy):

(1) Wash with large amounts of water. Use soap, if available.

(2) Keep covered to prevent scratching.

i. Infection:

(1) Keep wound clean.

(2) Change bandages, as needed.

j. Dysentery and diarrhea:

(1) Drink extra water.

(2) Eat charcoal. Make a paste by mixing fine charcoal particles with water. (It may relieve symptoms by absorbing toxins.)

k. Constipation (can be expected in survival situations). Drink extra water.

3. Plant Medicine

a. Tannin.

(1) Medical uses. Tannin solution prevents infection and aids healing. Use to treat burns and skin problems and for parasites, diarrhea, and dysentery. (See paragraph (4) below.)

(2) Sources. Found in outer bark of all trees, acorns, banana plants, common plantain, strawberry leaves, and blackberry stems.

(3) Preparation (to brew tannin tea):

(a) Place crushed outer bark, acorns, or leaves in water.

(b) Leach out tannin by soaking or boiling.

- Increase tannin content by longer soaking time.
- Replace depleted material with fresh bark/plants.

(4) Treatments.

(a) Burns:

- Moisten bandage with cooled tannin tea.
- Apply compress to burned area.
- Pour cooled tea on burned areas to ease pain.

(b) Diarrhea, dysentery, and worms. Drink strong tea solution.

(c) Skin problems (dry rashes and fungal infections). Apply cool compresses or soak affected part to relieve itching and promote healing.

(d) Lice and insect bites. Wash affected areas with tea to ease itching.

b. Salicin/salicylic acid.

(1) Medical uses. Salicin/salicylic acid has aspirin-like qualities. Use to treat colds, sore throat, fever, inflammation, aches, pain, and sprains.

(2) Sources. Willow (*Salix alba*) and aspen (*Populus tremula*) trees (see figure V-4).

(3) Preparation:

(a) Gather twigs, buds, or cambium layer (soft, moist layer between the outer bark and the wood) of willow or aspen.

(b) Brew tea following method as described in paragraph 3a(3) above.

(c) Make poultice.

- Crush plant or stems.
- Make pulpy mass.

(4) Treatments:

(a) Chew on twigs, buds, or cambium for symptom relief.

(b) Drink tea for colds and sore throat.

(c) Use warm, moist poultice for aches and sprains.

- Apply pulpy mass over injury.
- Hold in place with dressing.

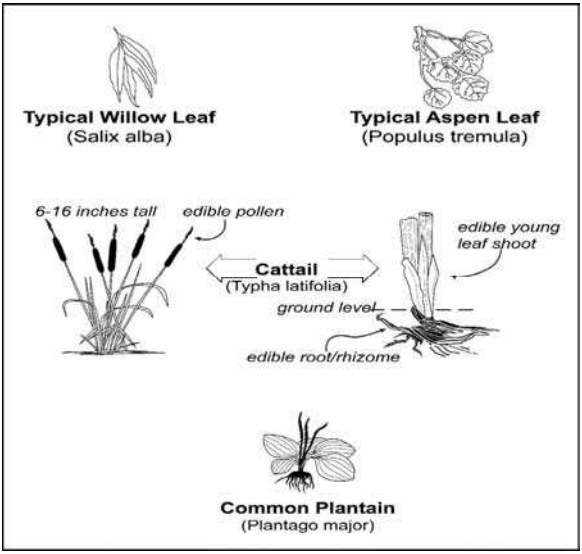

Figure V-4. Useful Plants

c. Common plantain (*Plantago major*).

(1) Medical uses. Use to treat itching, wounds, abrasions, stings, diarrhea, and dysentery.

(2) Source. There are over 200 species in the plantain family (*Plantaginaceae*) with similar medicinal properties. The common plantain shown in figure V-4 is Plantago major and is common in North America. (Do not confuse this plantain with the starchy, banana-like fruit, *Musa paradisiacal*).

(3) Preparation:

(a) Brew tea from seeds.

(b) Brew tea from leaves.

(c) Make poultice of leaves.

(4) Treatments:

(a) Drink tea made from seeds for diarrhea or dysentery.

(b) Drink tea made from leaves for vitamin and minerals.

(c) Use poultice to treat cuts, sores, burns, and stings.

d. Common cattail (*Typha latifolia*).

CAUTION: Do not confuse with the poisonous daffodil (*Amaryllidaceae*) and poisonous iris (Iris species) shoots, which have similar leaves. If a stand is still topped by last year's cottony seed heads, you know you have the right plant

(1) Medical uses. Wounds, sores, boils, inflammations, burns, as well as an excellent food source.

(2) Source. Cattail plants are found in marshes (see figure V-4).

(3) Preparation:

(a) Pound roots into pulpy mass for poultice.

(b) Cook and eat green bloom spikes.

(c) Collect yellow pollen for flour substitute.

(d) Peel and eat tender shoots (raw or cooked).

(4) Treatments.

(a) Apply poultice to affected area.

(b) Use plant for food, vitamins, and minerals.

4. Health and Hygiene

a. Stay clean (daily regimen).

b. Prevent and control parasites:

(1) Check body for lice, fleas, ticks, leeches, or other parasites.

(a) Check body regularly.

(b) Pick off insects and eggs; DO NOT crush.

(2) Wash clothing and use repellents.

(3) Use smoke to fumigate clothing and equipment.

5. Rules for Avoiding Illness

a. Purify all water obtained from natural sources by using iodine tablets or bleach, or bringing to a rolling boil for at least 10 minutes and then strain.

b. Avoid contaminating water source with human waste.

c. Wash hands before preparing food or water.

d. Clean all eating utensils after each meal.
e. Prevent insect bites by using repellent, netting, and clothing.
f. Dry wet clothing as soon as possible.
g. Eat what you can.
h. Try to rest.

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Chapter VI
PERSONAL PROTECTION

1. Priorities

a. Evaluate available resources and situation and accomplish individual tasks accordingly.

2. Care and Use of Clothing

a. Never discard clothing.

b. Wear loose and layered clothing.

(1) Tight clothing restricts blood flow regulating body temperature.

(2) Layers create more dead air space.

c. Keep entire body covered to prevent sunburn and dehydration in hot climates. When fully clothed, the majority of body heat escapes through the head and neck areas.

d. Avoid overheating.

(1) Remove layers of clothing before strenuous activities.

(2) Wear a hat when in direct sunlight (in hot environment).

e. Dampen clothing when on ocean in hot weather.

(1) Use salt water to dampen clothing, not drinking water.

Note: Only use drinking water for drinking.

(2) Dry clothing before dark to prevent hypothermia.

f. Keep clothing dry to maintain insulation qualities (dry damp clothing in sun or by fire).

g. If you fall into water in winter:

(1) Build fire.

(2) Remove wet clothing and re-warm by fire.

(3) Finish drying clothing by fire.

h. If no fire is available:

(1) Remove clothing and get into personal protection.

(2) Allow wet clothes to freeze/break ice out of clothing.

i. Keep clothing clean (dirt reduces insulation qualities). Examine clothing frequently for damage.

(1) DO NOT sit or lie directly on ground.

(2) Wash clothing and repair when possible.

j. Improvised foot protection or hiding foot signature (figure VI-1).

(1) Cut two to four layers of cloth into a 30-inch square.

(2) Fold into a triangle.

(3) Center foot on triangle with toes toward corner.

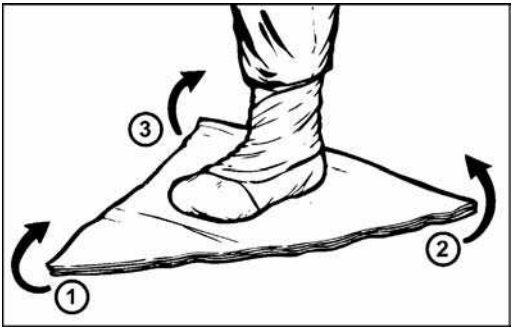

Figure VI-1. Improvised Foot Wear

(4) Fold front over toes.

(5) Fold side corners, one at a time, over instep.

(6) Secure or tuck into other layers of material.

3. Other Protective Equipment

a. Sleeping bag.

(1) Fluff before use, especially at foot of bag.

(2) Air and dry daily to remove body moisture.

(3) Improvise with available material (i.e., dry grass, leaves, dry moss).

b. Sun and snow goggles (figure VI-2).

(1) Wear in bright sun or snow conditions.

(2) Improvise by cutting small horizontal slits in webbing, bark, or the back page of this publication.

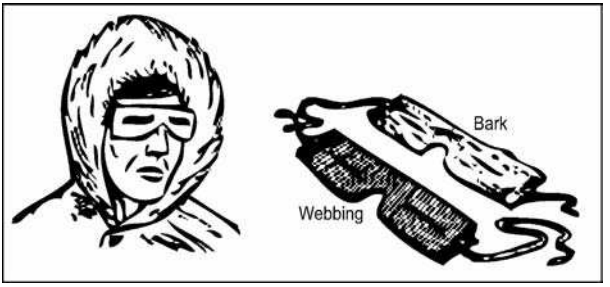

Figure VI-2. Sun and Snow Goggles

c. Gaiters (figure VI-3). Used to protect from sand, snow, insects, and scratches (wrap material around lower leg and top of boots).

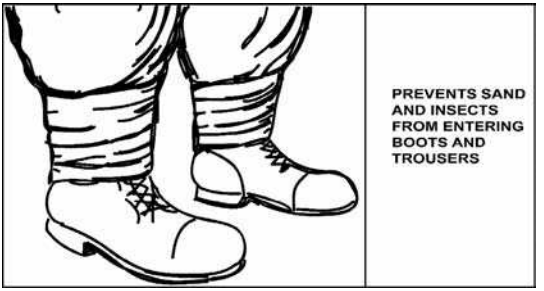

Figure VI-3. Gaiters

4. Shelters

Evasion considerations apply.

a. Site selection.

(1) Near signal and recovery site.

(2) Available food and water.

(3) Avoid natural hazards; i.e., dead standing trees, drainage and dry river beds, and avalanche areas.

(4) A location large and level enough in which to lie down.

b. Types.

(1) Immediate shelters. Find shelter needing minimal improvements (figure VI-4).

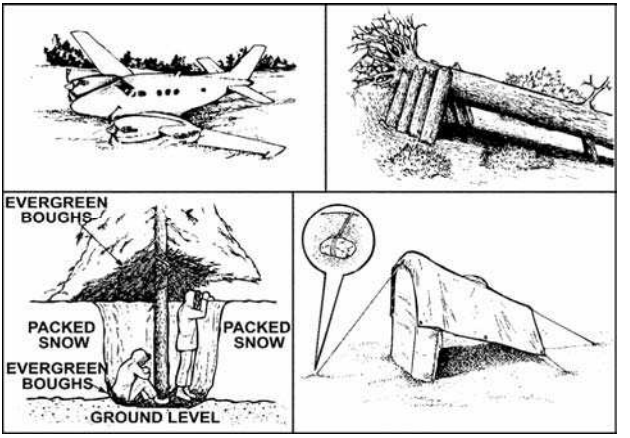

Figure VI-4. Immediate Shelters

Note: The metal skin of an aircraft will act as a heat exchanger in very cold weather making the interior of the aircraft as cold or colder than the outside air.

(2) General shelter. Temperate climates require shelter that protects from wind and rain.

(3) Thermal A-frame, snow trench, snow cave (figures VI-5 through VI-7). Cold climates require an enclosed, insulated shelter. Try to dig down to earth surface to utilize radiant heat.

(a) Snow is the most abundant insulating material.

(b) Air vent is required to prevent carbon monoxide poisoning when using an open flame inside enclosed shelters.

Note: As a general rule, unless you can see your breath, your snow shelter is too warm and should be cooled down to preclude melting and dripping.

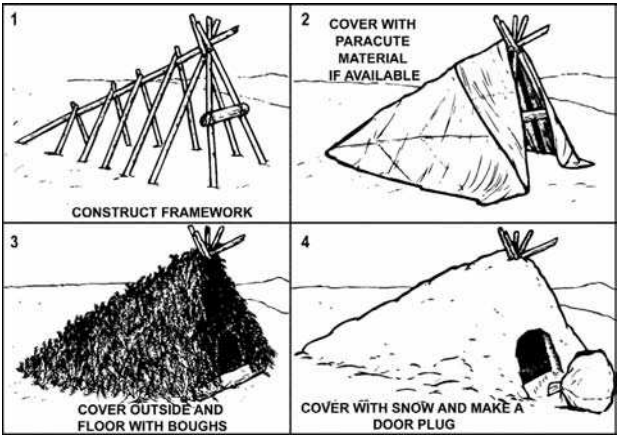

Figure VI-5. Thermal A-Frame

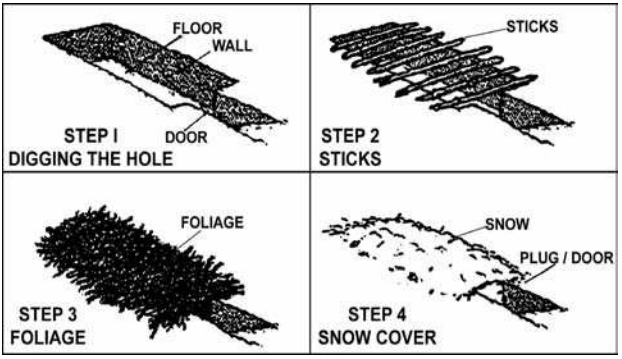

Figure VI-6. Snow Trench

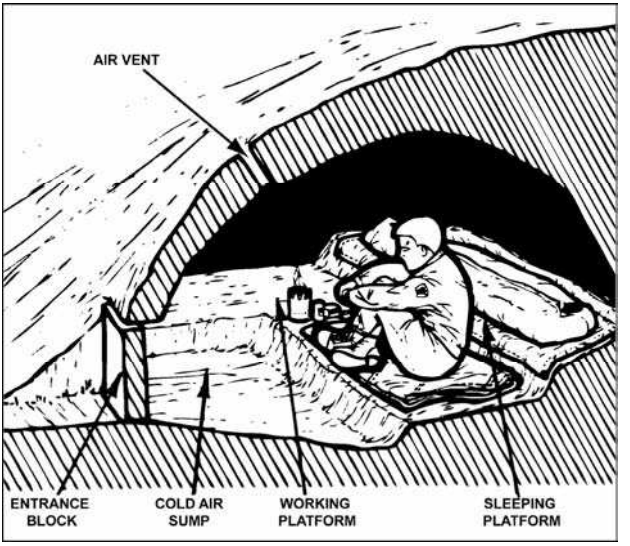

Figure VI-7. Snow Cave

(4) Shade shelter. Hot climates require shade shelter to protect from ultraviolet rays (figure VI-8).

(a) To reduce surface temperature, shelter floor should be elevated or dug down (approximately 18 inches).

(b) For thermal protection, a minimum of two layers of material (12 to 18 inches apart) are required. White is the best color to reflect heat (inner most layer should be of darker material).

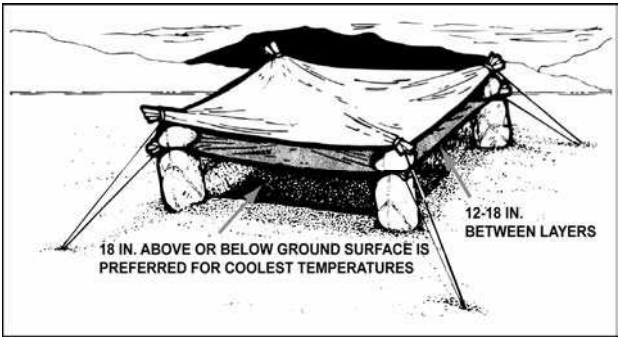

Figure VI-8. Poncho/Parachute Shade Shelter

(5) Elevated platform shelter (figure VI-9). Tropical/wet climates require enclosed, elevated shelter for protection from dampness and insects.

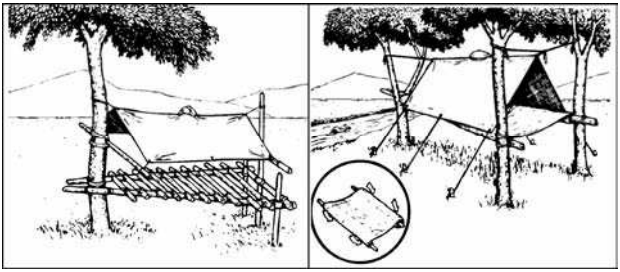

Figure VI-9. Elevated Platform Shelter

c. Shelter construction.

(1) Have entrance 45 to 90 degrees from prevailing wind.

(2) Cover with available material.

(a) If natural materials are used, arrange in layers starting at bottom with each layer overlapping previous layer (figure VI-10).

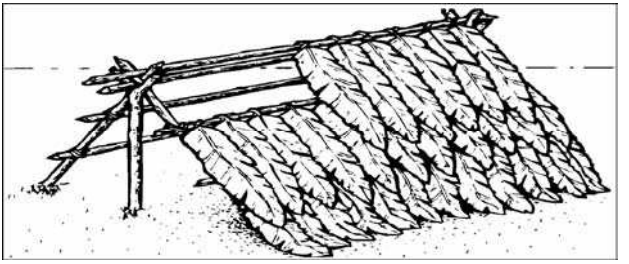

Figure VI-10. Shingle Method

(b) If using porous material like parachute, blankets;

- Stretch as tight as possible.
- Use a 40- to 60-degree slope.
- Use additional layers in heavy rain.

d. Shelter construction materials using natural and man-made materials at hand (i.e., raft vehicle/aircraft parts, parachute, sheet of plastic, bark, sod, sand, snow, and broad leaves).

e. Bed construction. Construct bed to protect from cold, damp ground (i.e., raft, foam rubber from vehicle seats, boughs, leaves, and/or dry moss).

f. In wet climates dig a ditch around the shelter to aid/improve drainage and prevent water from flowing into/through the shelter.

5. Fires

CAUTION: Use fire only as a last resort. Weigh hazards and risks of detection against the need for fire.

a. Evasion considerations:

(1) Use trees or other sources to dissipate smoke.

(2) Use fires at dusk, dawn, or during inclement weather.

(3) Use fires at times when local populace is cooking.

b. Building a fire: Three essential elements for starting a fire are heat, fuel, and oxygen.

(1) Heat sources:

- Matches, lighter, spark devices, batteries, magnifying glass, flashlight reflectors, and pyrotechnics, such as flares (last resort).

- Friction. Without prior training, this source is difficult to master and requires a lot of time to build the device.

(2) Fuel is divided into three categories: tinder, kindling, and fuel. (Gather large amounts of each category before igniting a fire.)

(a) Tinder. Tinder must be very finely shaved or shredded to provide low combustion point and fluffed to allow oxygen to flow through. (To get tinder to burn hotter and longer, saturate with petroleum or alcohol-based products (Vaseline, Chap Stick, insect repellant, aircraft fuel). Many of these items can be found in first aid kit. Examples of tinder include cotton with Vaseline, dry bark, dry grasses, gunpowder, pitch (sap saturated coniferous wood), and candle wick.

(b) Kindling. Kindling is pencil-lead to pencil-size dry wood small enough to ignite from the small flame of the tinder. Gradually add larger kindling until arriving at the size of fuel to burn.

(c) Fuel (i.e., dry wood [removing bark and using hardwoods reduces smoke], bamboo [open chambers to prevent explosion], and dry dung).

c. Types. Fires are built to meet specific needs or uses.

(1) Tepee fire (figure VI-11). Use tepee fire to produce concentrated heat source for cooking, lighting, or signaling.

(2) Log cabin fire (figure VI-11). Use log cabin fire to produce large amounts of light and heat to dry wet wood and provide coals for cooking and so forth.

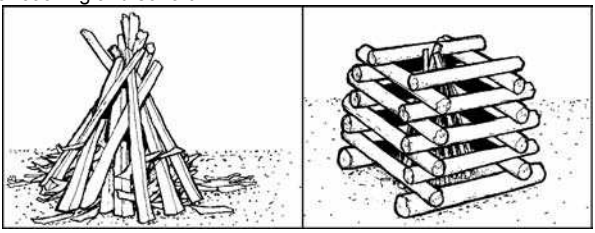

Figure VI-11. Tepee Fire and Log Cabin Fire

(3) Sod fire and reflector (figure VI-12). Use fire reflectors to get the most warmth from fire. Build fires against rocks or logs.

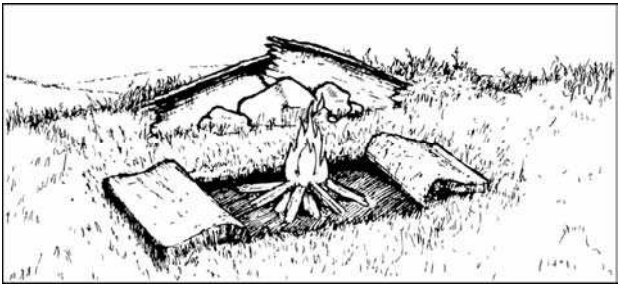

Figure VI-12. Sod Fire and Reflector

(4) Dakota fire hole (figure VI-13). Use the Dakota fire hole for high winds or evasion situations.

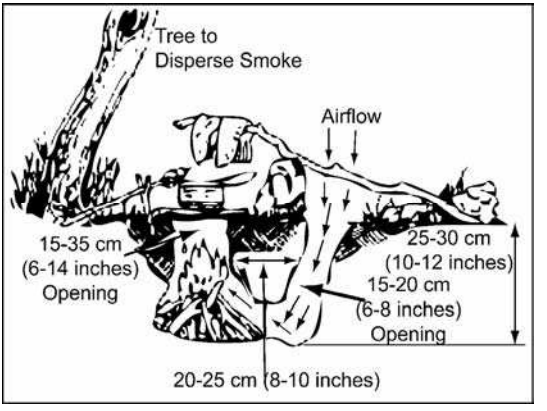

Figure VI-13. Dakota Fire Hole

Chapter VII
WATER

1. Water Requirements

Drink water. Exertion, heat, injury, or an illness increases water loss.

2. Signs and Symptoms of Dehydration

a. Dry/chapped lips, dark urine.

b. Thirst, weakness, fatigue, dizziness, and headache.

3. Water Procurement

c. There are no water substitutes. DO NOT drink urine, fish juices, blood, or sea water.

d. Water sources:

(1) Surface water (streams, lakes, and springs).

(2) Precipitation (rain, snow, dew, sleet) (figure VII-1).

(3) Subsurface (wells and cisterns).

(4) Ground water (arid or desert environment) (figure VII-2).

(a) Abundance of lush green vegetation.

(b) Drainages and low-lying areas.

(c) "V" intersecting game trails often point to water.

(d) Presence of swarming insects indicates water is near.

(e) Croaking frogs and presence of bees.

(f) Bird flight in the early morning to water or late afternoon from water.

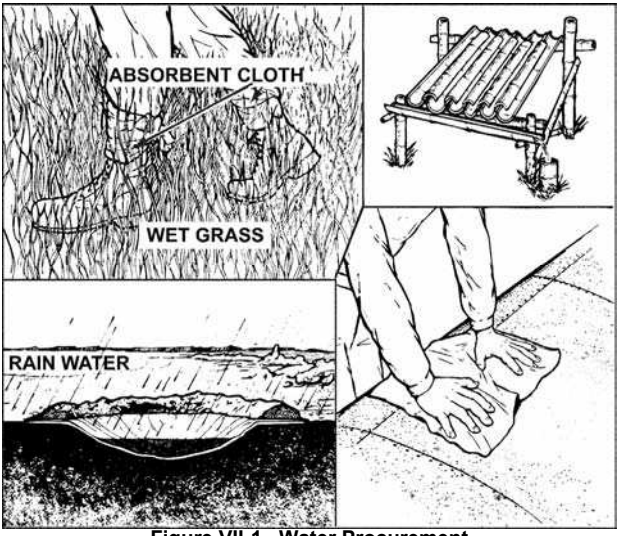

Figure VII-1. Water Procurement

(5) Snow or ice.

(a) Do not eat snow or ice. It lowers body temperature, induces dehydration, and may cause minor cold injury to lips/mouth.

(b) Melt with fire. Stir frequently to prevent damaging container.

(c) Melt with body heat. Use waterproof container and place between layers of clothing.

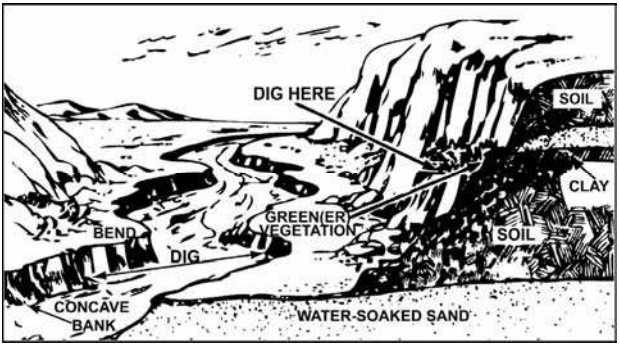

Figure VII-2. Water Indicators

(6) Open seas.

(a) Water available in survival kits.

(b) Precipitation: Drink as much as possible, catch rain in spray shields and life raft covers, and collect dew off raft.

(c) Fresh water from old sea ice or icebergs has rounded corners and tastes relatively salt-free.

(7) Tropical areas.

(a) All open sources previously mentioned.

(b) Vegetation.

- Plants with hollow sections can collect moisture.
- Banana plants (figure VII-3). Cut down the plant, leaving stump. Scoop out center of stump so hollow is bowl-shaped. Water from roots will immediately start to fill hollow. First three fillings of water will be bitter, but succeeding fillings will be palatable. Be sure to cover it with banana leaves to keep insects out.

Figure VII-3. Banana Plants

- Vines (figure VII-4). Cut bark (DO NOT use milky/red sap). If juice is clear and water-like, cut as large a piece of vine as possible (cut the top first). Pour into hand to check smell, color, and taste to determine if drinkable. DO NOT touch vine to lips. When water flow stops, cut off 4-6 inches of opposite end, water will flow again.

- Bamboo. Shake and listen for water. Bore hole at bottom of section to obtain water. Cut out entire section to carry with you. Filter and purify.

Figure VII-4. Water Vines

- Coconuts. Break through husk and nut to obtain water utilizing knife, saw, or pointed stick. Ripe coconuts (on ground) may cause excessive diarrhea.

- Beach well. Along coast, obtain water by digging beach well (figure VII-5).

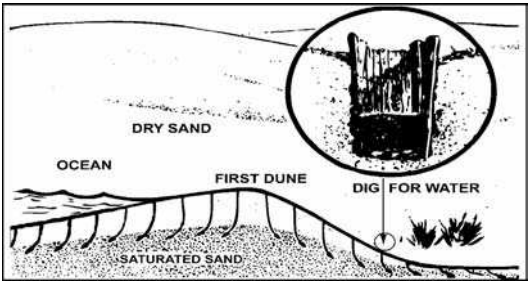

Figure VII-5. Beach Well

(8) Dry areas. Construct as many collection devices as possible/necessary.

(a) Transpiration bag (figure VII-6). Utilize clear plastic bag and ensure as airtight as possible.

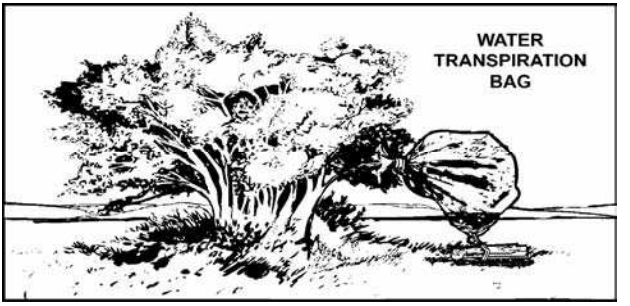

Figure VII-6. Transpiration Bag

(b) Vegetation bag (figure VII-7). Utilize clear plastic bag, bundle vegetation, and ensure as airtight as possible. Water may taste like vegetation.

CAUTION: DO NOT use poisonous/toxic plants in vegetation/transpiration bags.

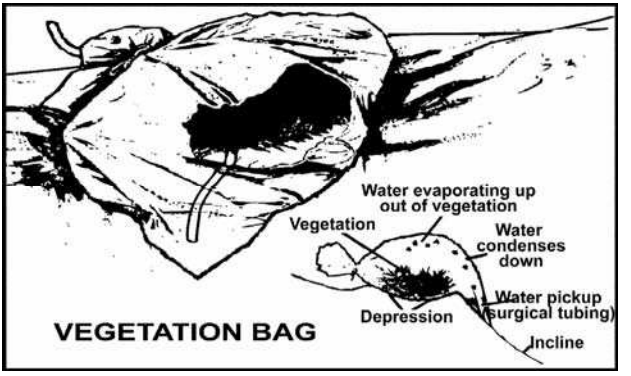

Figure VII-7. Vegetation Bag

(9) Urban areas.

(a) Purify all water even tap water. Consider all water polluted.

(b) Beware of chemically poisoned or treated water traps.

(c) Utilize unorthodox sources (i.e., drainages, puddles, sinks, and run-offs).

4. Water Preparation and Storage

Note: Filtration does not equal purification.

a. Filtration. When procuring dirty water, filter through porous material (sand/charcoal) prior to purifying. See figure IX-4 and figure IX-5 depicting filtration systems, in chapter IX. A seepage basin will also help to filter water (figure VII-8).

b. Purification.

(1) Water from live plants requires no further treatment.

(2) Purify all other water.

(a) Bring to a rolling boil for at least 10 minutes and then strain.

(b) Water purification tablets. Follow instructions on package or use one tablet for clear water and two for muddy/murky water.

(c) Bleach: 4 drops per quart

(d) Two percent Iodine Tincture (in first aid kit): 10 drops per quart.

(e) Ten percent Povidone Iodine Solution (in first aid kit): 1-2 drops per quart.

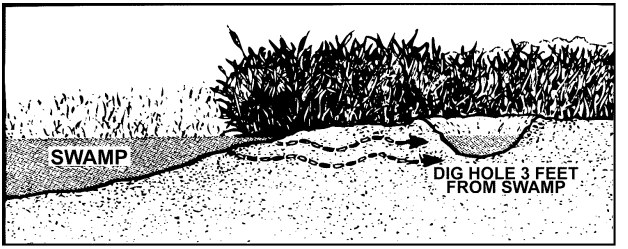

Figure VII-8. Seepage Basin

c. Potable Water.

(1) Pour from one container to another to improve taste, to aerate.

(2) If water cannot be purified, obtain water from the cleanest source possible and filter. Put in clear container and expose to the sun's ultraviolet (UV) rays to kill bacteria (4 hours of direct sunlight should be sufficient to kill bacteria). This may kill pathogens if temperature and UV light is optimal.

d. Storage. To prevent contamination, use a clean, covered, or sealed container (i.e., utilize clear plastic bag, trash bag, prophylactic, section of bamboo, or flotation gear).

Chapter VIII
FOOD

1. Food Requirements

a. Sources and location.

(1) Mammals can be found where:

(a) Trails lead to watering, feeding, and bedding areas.

(b) Droppings or tracks look fresh.

(2) Birds can be found by:

(a) Observing the direction of flight in the early morning and late afternoon (leads to feeding, watering, and roosting areas).

(b) Listening for bird noises (indication of nesting areas).

(3) Fish and other marine life locations.

(4) Reptiles and amphibians are found almost worldwide.

(5) Insects are easy to gather and could provide primary source of protein. Find them in dead logs and stumps and on ponds, lakes, and slow moving streams.

b. Procurement techniques.

(1) Snares:

(a) Work while left unattended.

(b) Place at trails leading to water, feeding, and bedding areas, and mouths of dens (figure VIII-1).

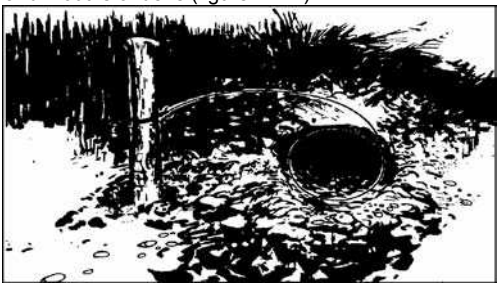

Figure VIII-1. Snare Placement

(c) Construction of simple loop snare.

- Use materials that will not break under strain of holding a struggling animal.
- Ensure a struggling animal cannot use nearby vegetation or rocks to break loose from the snare.
- Use figure eight (locking loop) if wire is used (figure VIII-2).
- Once tightened, wire locks in place, preventing reopening, and animal's escape.
- Make noose opening slightly larger than animal's head (3-finger width for squirrels, fist-sized for rabbits).
- Placement of snares (set as many as possible) (figure VIII-3).
- Avoid disturbing the area.
- Use funneling (natural or improvised) (figure VIII-4).

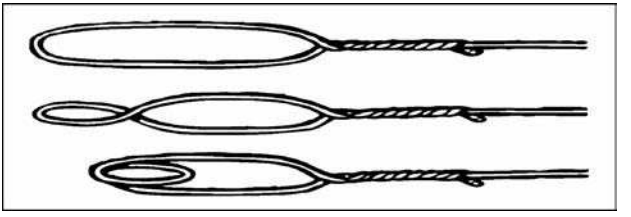

Figure VIII-2. Locking Loop

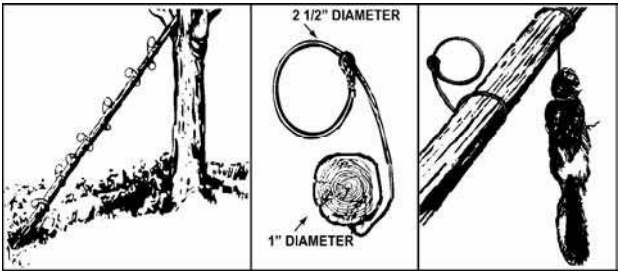

Figure VIII-3. Squirrel Pole

(2) Noose stick (easier and safer to use than hands).

(3) Twist stick (figure VIII-5).

(a) Insert forked stick into den until something soft is met.

(b) Twist stick, binding animal's hide in fork, then remove animal from den.

(c) Be ready to kill animal; it may be dangerous.

Figure VIII-4. Funneling

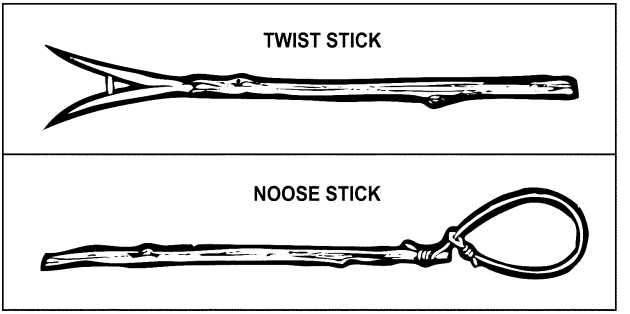

Figure VIII-5. Procurement Devices

(4) Hunting and fishing devices (see figure VIII-6 for fishing procurement methods); i.e., club, rock, spear, slingshot, line, hook, net, and trap.

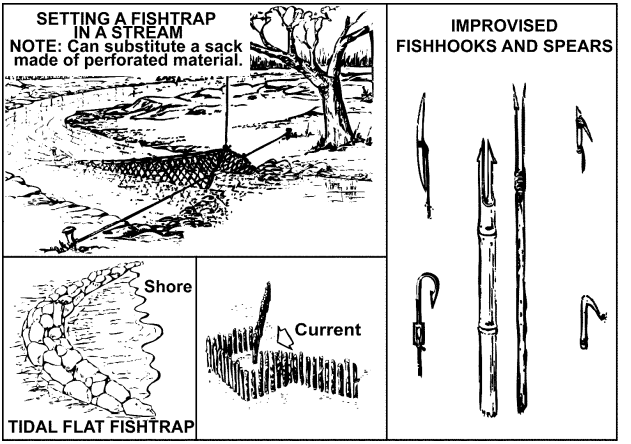
SETTING A FISHTRAP IN A STREAM
NOTE: Can substitute a sack made of perforated material.
IMPROVISED FISHHOOKS AND SPEARS
Shore
Current
TIDAL FLAT FISHTRAP

Figure VIII-6. Procurement Methods

(5) Precautions:

(a) Kill animals before handling. Animals in distress may attract the enemy or larger, more dangerous animals.

(b) Avoid reaching into dark holes.

(c) Wear shoes to protect feet when wading in water.

(d) DO NOT secure fishing lines to yourself or raft.

(e) Kill fish before bringing them into raft.

(f) DO NOT eat fish with spines, pale/slimy gills, sunken eyes, flabby skin, and flesh that remains dented when pressed.

(g) DO NOT eat fish eggs or liver (entrails).

(h) Avoid all crustaceans above high tide mark.

(i) Avoid cone-shaped shells.

(j) Avoid hairy and bright colored insects.

(k) Avoid poisonous insects and arachnids.

(l) Avoid disease carrying insects, such as—flies, mosquitoes, and ticks.

c. Plant foods. Before using the following guide, use evasion chart to identify edible plants:

Note: The critical factor in using plants for food is to avoid accidental poisoning. Eat only those plants you can positively identify and you know are safe to eat. If you cannot positively identify an edible plant and choose to try an unknown plant, these guidelines may help determine edibility.

(1) Selection criteria.

(a) Before testing for edibility, ensure there are enough plants to make testing worth your time and effort. Each part of a plant (roots, leaves, stems, bark) requires more than 24 hours to test. DO NOT waste time testing a plant that is not abundant.

(b) Test only one part of one plant at a time. Always prepare and test it the same way.

(c) Remember that eating large portions of plant food on an empty stomach may cause diarrhea, nausea, or cramps. Two good examples are green apples and wild onions. Even after testing food and finding it safe, eat in moderation.

(2) Avoid plants with the following characteristics:

Note: Using these guidelines in selecting plants for food may eliminate some edible plants; however, these guidelines will help prevent choosing potentially toxic plants.

(a) Milky sap (dandelion has milky sap but is safe to eat and easily recognizable).

(b) Spines, fine hairs, and thorns (skin irritants/contact dermatitis). Prickly pear and thistles are exceptions.

(c) Mushrooms and fungus.

(d) Umbrella shaped flowers (hemlock is eliminated).

(e) Bulbs (only onions smell like onions).

(f) Grain heads with pink, purplish, or black spurs.

(g) Beans, bulbs, or seeds inside pods.

(h) Old, wilted, and shiny leaves.

(i) Almond scent in woody parts and leaves.

(3) Berry rules:

(a) Aggregate berries (blackberry, raspberry). Almost all are edible.

(b) Blue or black. 90% are edible.

(c) Red. 50% are edible.

(d) White, yellow, or green. 10% are edible.

(4) Edibility test procedures.

(a) Test only one part of a plant at a time.

CAUTION: Test all parts of the plant for edibility. Some plants have both edible and inedible parts. NEVER ASSUME a part that proved edible when cooked is edible raw, test the part raw before eating. The same part or plant may produce varying reactions in different individuals.

(b) Separate the plant into its basic components (stems, roots, buds, and flowers).

(c) Smell food for strong acid odors. Remember, smell alone does not indicate plant is edible or inedible.

(d) **DO NOT** eat 8 hours before test and drink only purified water.

(e) During 8 hours you abstain from eating, test for contact poisoning by placing a piece of the plant on the inside of your elbow or wrist. Sap or juice should contact skin. Usually 15 minutes is enough time to allow for a reaction.

(f) During testing, take NOTHING by mouth EXCEPT purified water and the plant you are testing.

(g) Select small portion of a single part and prepare it the way you plan to eat it.

(h) Before placing prepared plant in mouth, touch small portion (pinch) to inside of wrist to test for burning or itching.

(i) If after 3 minutes there is no reaction on lip, place plant on your tongue and hold it for 15 minutes.

(j) If there is no reaction, thoroughly chew a pinch and hold it in your mouth for 15 minutes (DO NOT SWALLOW-spit excess saliva). If any ill effects occur, rinse out your mouth with water.

(k) If nothing abnormal occurs, swallow food and wait 8 hours. If any ill effects occur during this period, induce vomiting and drink a water and charcoal mixture.

(l) If no ill effects occur, eat 1/4 cup of same plant prepared same way. Wait another 8 hours. If no ill effects occur, plant part as prepared is safe for eating.

d. Urban Procurement

CAUTION: Ripe tropical fruits should be peeled and eaten raw. Softness, rather than color, is the best indicator of ripeness. Cook unripe fruits and discard seeds and skin. Cook underground portions to reduce bacterial contamination and ease digestion of their generally high starch content.

(1) Know your area of operation's flora and fauna, local foods, and their sources.

(2) Theft is not recommended and carries harsh consequences. If theft is necessary to sustain life, take great steps to go unnoticed, taking only what you absolutely need (in and around densely populated areas).

(3) Blend your procurement methods with local methods.

2. Food Preparation

Animal food gives greatest food value per pound.

a. Butchering and skinning.

(1) Mammals.

(a) Remove skin and save for other uses.

(b) One cut skinning of small game (figure VIII-7). Open abdominal cavity. Avoid rupturing the intestines or urine bladder when removing entrails. If the bladder ruptures and urine spills on the meat, wash the meat to avoid contamination. If eating inner

organs (heart, liver, and kidneys) cook well-done. Consume all meaty parts of skull, brain, tongue, and eyes

(c) Wash when ready to use.

(d) If preserving meat, remove it from bones.

(e) Unused or inedible organs and entrails may be used as bait for other game.

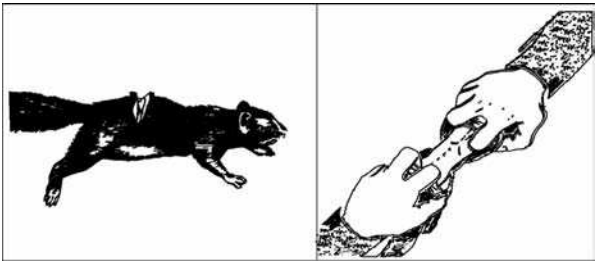

Figure VIII-7. Small Game Skinning

(2) Frogs and snakes. Skin, then discard skin, head (snake) with two inches of body (to avoid poison glands), and internal organs.

(3) Fish.

(a) Scale (if necessary) and gut fish soon after it is caught.

(b) Insert knifepoint into anus of fish and cut open belly.

(c) Remove entrails and gills to prevent spoilage.

(4) Birds.

(a) Gut soon after killing.

(b) Protect from flies.

(c) Skin or pluck them (skin scavengers and sea birds).

(5) Insects.

(a) Remove all hard portions such as legs, wings, and extremities.

CAUTION: Dead insects spoil rapidly, DO NOT save.

(b) Recommend cooking grasshopper-size insects.

(6) Fruits, berries, and most nuts can be eaten raw.

b. Cooking.

(1) Boiling (most nutritious method of cooking—drink the broth).

CAUTION: To kill parasites, thoroughly cook all wild game, freshwater fish, clams, mussels, snails, crawfish, and scavenger birds. Saltwater fish may be eaten raw.

(a) Improvise metal cooking containers from available resources.

(b) Drop heated rocks into containers to boil water or cook food.

(2) Baking.

(a) Wrap in leaves or pack in mud.

(b) Bury food in dirt under coals of fire.

(3) Leaching. Some nuts (acorns) must be leached to remove the bitter taste of tannin. Use one of the following leaching methods:

(a) First method:

- Soak and pour water off.
- Crush and pour water through. Cold water should be tried first; however, boiling water is sometimes best. Discard water.

(b) Second method:

- Boil, pour off water, and taste plant. If bitter, repeat process until palatable.

(4) Roasting.

(a) Shake shelled nuts in a container with hot coals.

(b) Roast thinly sliced meat and insects over candle.

3. Food Preservation

a. Keep animal alive.

b. Refrigerate.

(1) Long term.

(a) Freeze in meal-size portions.

(b) Mark cache/freezer location to relocate.

(2) Short term.

(a) Food wrapped in waterproof material and placed in a stream remains cool.

(b) Buried (shady areas or along streams work best).

(c) Wrap food in absorbent material, such as cotton, and re-wet as water evaporates.

c. Drying and smoking removes moisture and preserves food.

(1) Use salt to improve flavor and promote drying.

(2) Remove fat. Cut or pound meat into thin strips (1/8 inch).

(3) Avoid using fir or pine to smoke meat (produce soot and makes meat inedible).

d. Protecting meat from animals and insects.

(1) Wrapping food.

(a) Use clean material. Wrap pieces individually.

(b) Ensure all corners of wrapping are insect proof.

(c) Wrap soft fruits and berries in leaves or moss.

(2) Hanging meat.

(a) Hang meat in shade.

(b) Cover during daylight hours to protect from insects.

Note: This method should only be used in a permissive environment as the hanging of meat may reveal your position.

(3) Packing meat for movement.

(a) Wrap before flies appear.

(b) Place meat in fabric or clothing for insulation and place in pack.

(c) Carry shellfish, crabs, and shrimp in wet seaweed.

e. Food stored in shelter could attract animals.

Chapter IX
INDUCED CONDITIONS

1. Nuclear Conditions

CAUTION: Radiation protection depends on time of exposure, distance from the source, and shielding.

a. Protection.

(1) **FIND PROTECTIVE SHELTER IMMEDIATELY!**

(2) Gather all equipment for survival (time permitting).

(3) Avoid detection and capture.

(a) Seek existing shelter that may be improved (figure IX-1).

Figure IX-1. Immediate Action Shelter

(b) If no shelter is available, dig a trench or foxhole as follows:

- Dig trench deep enough for protection, then enlarge for comfort (figure IX-2).
- Cover with available material.

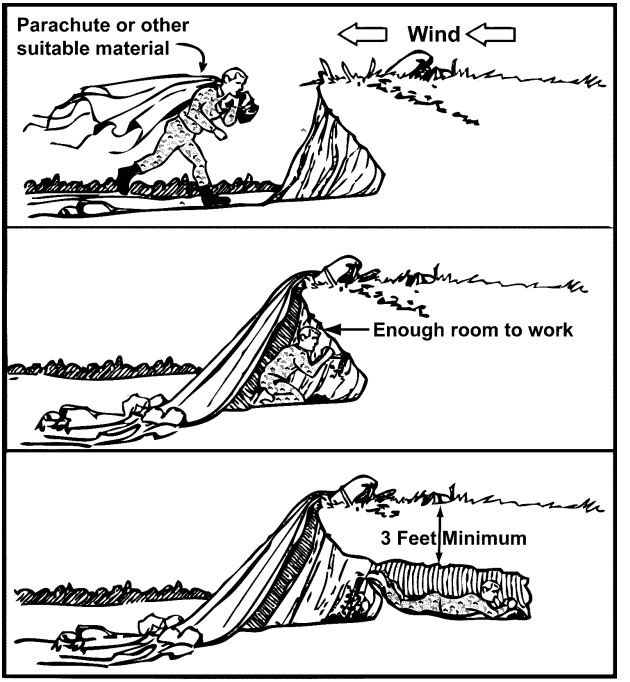

Figure IX-2. Improvised Shelter

(4) Radiation shielding efficiencies (figure IX-3).

(5) Leave contaminated equipment and clothing near shelter for retrieval after radioactive decay.

(6) Lie down, keep warm, sleep, and rest.

NUCLEAR EXPLOSIONS: Fall flat. Cover exposed body parts. Present minimal profile to direction of blast. ***DO NOT*** *look at fireball!* Remain prone until blast effects are over.

SHELTER: Pick, as soon as possible, 5 minutes unsheltered is maximum!
Priority: (1) Cave or tunnel covered with 3 or more feet of earth.
(2) Storm/storage cellars.
(3) Culverts.
(4) Basements.
(5) Abandoned stone/mud buildings.
(6) Foxhole 4 feet deep (remove topsoil within 2 feet radius of foxhole lip).

RADIATION SHIELDING EFFICIENCIES

Iron/Steel	.7 inches	Cinder Block	5.3 inches
Brick	2.0 inches	Ice	6.8 inches
Concrete	2.2 inches	Wood (Soft)	8.8 inches
Earth	3.3 inches	Snow	20.3 inches

One thickness reduces received radiation dose by ½. Additional thickness added to any amount of thickness reduces received radiation dose by ½.

SHELTER SURVIVAL: Keep contaminated materials out of shelter.
Good Weather: Bury contaminated clothing outside of shelter (recover later).
Bad Weather: Shake strongly or beat with branches. Rinse and/or shake wet clothing.
DO NOT *wring out!*

PERSONAL HYGIENE: Wash entire body with soap and *any* water; give close attention to fingernails and hairy parts.
No Water: Wipe all exposed skin surfaces with clean cloth or uncontaminated soil. Fallout/dusty conditions-keep entire body covered. Keep handkerchief/cloth over mouth and nose. Improvise goggles. ***DO NOT*** *smoke!*

DAILY RADIATION TIME TABLE for NO RATE METER

4-6	Complete isolation	**9-12**	2-4 hours exposure per day
3-7	Brief exposure (30 minutes maximum)	**13**	Normal movement
8	Brief exposure (1 hour maximum)		

Figure IX-3. Radiation Shielding Efficiencies

b. Sustenance.

(1) Water.

(a) Allow no more than 30 minutes exposure on 3rd day for water procurement. Water sources (in order of preference):

- Springs, wells, or underground sources are safest.
- Water in pipes/containers in abandoned buildings.
- Snow (6 or more inches below the surface during fallout).
- Streams and rivers (filtered before drinking).
- Lakes, ponds, pools, etcetera.

- Water from below the surface (**DO NOT** stir up the water).
- Use seep well.

(b) Water preparation (figures IX-4 and IX-5).

- Filtering through earth removes 99 percent of radioactivity.
- Purify all water sources.

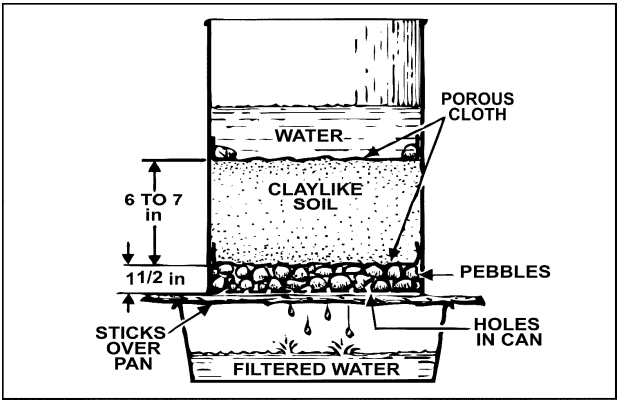

Figure IX-4. Filtration Systems, Filtering Water

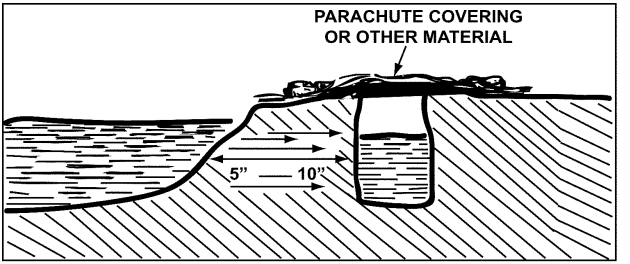

Figure IX-5. Filtration Systems, Settling Water

(2) Food.

(a) Processed foods (canned or packaged) are preferred; wash and wipe containers before use.

(b) Animal foods.

- Avoid animals that appear to be sick or dying.
- Skin carefully to avoid contaminating meat.
- Before cooking, cut meat away from bone, leaving at least 1/8 inch of meat on bone.
- Discard all internal organs.
- Cook all meat until very well done.

(c) Avoid.

- Aquatic food sources (use only in extreme emergencies because of high concentration of radiation).
- Shells of all eggs (contents will be safe to eat).
- Milk from animals.

(d) Plant foods (in order of preference).

- Plants whose edible portions grow underground (for example, potatoes, turnips, carrots). Wash and remove skin.
- Edible portions growing above ground that can be washed and peeled or skinned (bananas, apples, etcetera).
- Smooth skinned vegetables, fruits, or above ground plants that are not easily peeled or washed.

c. Self-aid.

(1) General rules.

(a) Prevent exposure to contaminants.

(b) Use personal hygiene practices and remove body waste from shelter.

(c) Rest, avoid fatigue.

(d) Drink liquids.

(2) Wounds.

(a) Clean affected area.

(b) Use antibacterial ointment or cleaning solution.

(c) Cover with clean dressing.

(d) Watch for signs of infection.

(3) Burns.

(a) Clean affected area.

(b) Cover with clean dressing.

(4) Radiation sickness (nausea, weakness, fatigue, vomiting, diarrhea, loss of hair, radiation burns).

(a) Time is required to overcome.

(b) Rest.

(c) Drink fluids.

(d) Maintain food intake.

(e) Prevent additional exposure.

2. Biological Conditions

a. Clues that may alert you to a biological attack.

(1) Enemy aircraft dropping objects or spraying.

(2) Breakable containers or unusual bombs, particularly those bursting with little or no blast and muffled explosions.

(3) Smoke or mist of unknown origin.

(4) Unusual substances on the ground or vegetation; sick looking plants or crops.

b. Protection from biological agents.

(1) Use protective equipment.

(2) Bathe as soon as situation permits.

(3) Wash hair and body thoroughly with soap and water.

(4) Clean thoroughly under fingernails.

(5) Clean teeth, gums, tongue, and roof of mouth frequently.

c. Survival tips for biological conditions.

(1) Keep body and living area clean.

(2) Stay alert for clues of biological attack.

(3) Keep nose, mouth, and skin covered.

(4) Keep food and water protected. Bottled or canned foods are safe if sealed. If in doubt, boil food and water for 10 minutes.

(5) Construct shelter in a clear area away from vegetation, with entrance 90 degrees to the prevailing wind.

(6) If traveling, travel crosswind or upwind (taking advantage of terrain to stay away from depressions).

3. Chemical Conditions

a. Detecting.

(1) Smell. Many agents have little or no odor.

(2) Sight. Many agents are colorless.

(a) Color. Yellow, orange, or red smoke or mist.

(b) Liquid. Oily, dark patches on leaves and ground.

(c) Gas. Some agents appear as a mist immediately after shell burst.

(d) Solid. Most solid state agents have some color.

(3) Sound. Muffled explosions are possible indications of chemical agent bombs.

(4) Feel. Irritation to nose, eyes, or skin and/or moisture on the skin are danger signs.

(5) Taste. Strange taste in food or water indicates contamination.

(6) General indications. Tears, difficult breathing, choking, itching, coughing, dizziness.

(7) Wildlife. Presence of sick or dying animals.

b. Protection against chemical agents.

(1) Use protective equipment.

(2) Avoid contaminated areas.

(a) Exit contaminated area by moving crosswind.

(b) Select routes on high ground.

(c) Avoid cellars, ditches, trenches, gullies, and valleys.

(d) Avoid woods, tall grasses, and bushes as they tend to hold chemical agent vapors.

(e) Decontaminate body and equipment as soon as possible.

- Remove. Pinch-blotting.
- Neutralize. Warm water.
- Destroy. Bury.

c. Self-aid in chemically contaminated areas.

(1) If a chemical defense ensemble is available:

(a) Use all protective equipment.

(b) Follow antidote directions, when needed.

(2) If a chemical defense ensemble is not available:

(a) Remove or tear away contaminated clothing.

(b) Rinse contaminated areas with water.

(c) Improvise breathing filter using materials available (such as T-shirt, handkerchief, or fabric).

d. Tips for survivor:

(1) **DO NOT** use wood from a contaminated area for fire.

(2) Look for signs of chemical agents around water sources before procurement (oil spots, foreign odors, dead fish, or animals).

(3) Keep food and water protected.

(4) **DO NOT** use plants in contaminated areas for food or water.

Appendix A
THE WILL TO SURVIVE

1. Psychology of Survival

a. Preparation.

(1) Know your capabilities and limitations.

(2) Keep a positive attitude.

(3) Develop a realistic plan.

(4) Anticipate fears.

(5) Combat psychological stress.

(6) Recognize and anticipate existing stressors (injury, death, fatigue, illness, environment, hunger, isolation).

(7) Attribute normal reactions to existing stressors (fear, anxiety, guilt, boredom, depression, anger).

(8) Identify signals of distress created by stressors (indecision, withdrawal, forgetfulness, carelessness, and propensity to make mistakes).

b. Strengthen your will to survive with:

(1) The Code of Conduct.

(2) Pledge of Allegiance and patriotic songs.

(3) Faith in America.

(4) Short term and personal goals.

(5) Thoughts of return to family, friends, and future plans.

c. Group dynamics of survival include:

(1) Leadership, good organization, and cohesiveness.

(2) Promote high morale.

(3) Prevent panic.

(4) Create strength and trust in one another.

(5) Favor persistency in overcoming failure.

(6) Facilitate formulation of group goals.

(7) Take care of your buddy.

(8) Work as a team.

(9) Reassure and encourage each other.

d. Influencing factors.

(1) Enforce chain of command.

(2) Organize according to individual capabilities.

(3) Accept suggestions and criticism.

2. Spiritual Considerations

Note: Never press spiritual considerations in large groups if doing so divides the group and/or creates active dissention.

a. Collect your thoughts and emotions.

b. Rely on your personal belief system.

(1) Identify your personal beliefs.

(2) Use self-control.

(3) Practice meditation.

(4) Remember past inner sources to help you overcome adversity.

(5) Exercise personal religious rituals (e.g., prayer, worship, and/or recitation of religious writings, scripture, or songs), if any.

c. With other survivors.

(1) Create an environment where each can openly discuss his/her personal beliefs without fear of judgment, if he/she chooses to do so.

(2) Encourage each other to maintain hope while waiting for rescue.

Appendix B
PUBLICATION INFORMATION

1. Purpose

This publication provides Service members a quick reference, weatherproof, pocket-size guide on basic survival, evasion, and recovery information.

2. Scope

This multi-Service tactics, techniques, and procedures publication is designed to assist Service members in a survival situation regardless of geographic location.

3. Applicability

The target audience for this publication is any Service member requiring basic survival, evasion, and recovery information.

4. Implementation Plan

Participating Service command offices of primary responsibility will review this publication, validate the information and, where appropriate, reference and incorporate it in Service manuals, regulations, and curricula as follows:

Army. Upon approval and authentication, this publication incorporates the procedures contained herein into the United States (US) Army Doctrine and Training Literature Program as directed by the Commander, US Army Training and Doctrine Command (TRADOC). Distribution is IAW applicable directives and the Initial Distribution Number (IDN) listed on the authentication page.

Navy. The Navy will incorporate these procedures in US Navy training and doctrine publications as directed by the Commander, Navy Warfare Development Command (NWDC)[N5]. Distribution is IAW Military Standard Requisition and Issue Procedure Desk Guide (MILSTRIP Desk Guide) Navy Supplement Publication-409 (NAVSUP P-409).

Air Force. The Air Force will incorporate the procedures in this publication IAW applicable governing directives. Distribution is IAW Air Force Instruction (AFI) 33-360.

5. User Information

a. TRADOC, NWDC, Headquarters Air Force Doctrine Center (AFDC), and the Air Land Sea Application (ALSA) Center developed this publication with the joint participation of the

approving Service commands. ALSA will review and update this publication as necessary.

b. This publication reflects current joint and Service doctrine, command and control organizations, facilities, personnel, responsibilities, and procedures. Changes in Service protocol, appropriately reflected in joint and Service publications, will likewise be incorporated in revisions to this document.

c. We encourage recommended changes for improving this publication. Key your comments to the specific page and paragraph and provide a rationale for each recommendation. Send comments and recommendations directly to—

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GLOSSARY

PART I – ABBREVIATIONS AND ACRONYMS

A, B

AFDC	Air Force Doctrine Center
AFI	Air Force Instruction
ALSA	Air Land Sea Application
ATO	air tasking order

C, D

CSAR	combat search and rescue

E, F

ELT	emergency locator transmitter
EPA	evasion plan of action

G, H

GPS	global positioning system

I

IAW	in accordance with
IDN	Initial Distribution Number
ISOPREP	isolated personnel report

J, K, L

JP	Joint Publication
LOC	line of communications
LOP	line of position

M

MILSTRIP	Military Standard Requisition and Issue Procedure
MTTP	multi-Service tactics, techniques, and procedures

N, O, P, Q, R

NAVSUP	Navy Supplement
NWDC	Navy Warfare Development Command

S, T, U, V, W, X, Y, Z

SPINS	special instructions
TRADOC	US Army Training and Doctrine Command
UV	ultraviolet

PART II – TERMS AND DEFINITIONS

authenticate—A challenge given by voice or electrical means to attest to the authenticity of a message or transmission. (JP 1-02)

camouflage—The use of natural or artificial material on personnel, objects, or tactical positions with the aim of confusing, misleading, or evading the enemy. (JP 1-02)

concealment—The protection from observation or surveillance. (JP 1-02)

datum—Any numerical or geometrical quantity or set of such quantities which may serve as reference or base for other quantities. Where the concept is geometric, the plural form is "datums" in contrast to the normal plural "data." (JP 1-02)

Department of Defense (DD) Form 1833 Isolated Personnel Report— contains information designed to facilitate the identification and authentication of an evader by a recovery force. Also called **(ISOPREP)**. (JP 1-02)

evasion and recovery—The full spectrum of coordinated actions carried out by evaders, recovery forces, and operational recovery planners to effect the successful return of personnel isolated in hostile territory to friendly control. (JP 1-02)

evasion plan of action— A course of action, developed before executing a combat mission, that is intended to improve a potential evader's chances of successful evasion and recovery by providing recovery forces with an additional source of information that can increase the predictability of the evader's actions and movement. Also called **EPA**. (JP 1-02)

FM 3-50.3
NTTP 3-50.3
AFTTP(I) 3-2.26

20 March 2007

By Order of the Secretary of the Army:

Official:

GEORGE W. CASEY
General, United States Army
Chief of Staff

JOYCE MORROW
Administrative Assistant to the
Secretary of the Army
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By Order of the Secretary of the Air Force

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MCWP 3-11.3

Scouting and Patrolling

U.S. Marine Corps

17 April 2000

PCN 143 000075 00

To Our Readers

Changes: Readers of this publication are encouraged to submit suggestions and changes that will improve it. Recommendations may be sent directly to Commanding General, Marine Corps Combat Development Command, Doctrine Division (C 42), 3300 Russell Road, Suite 318A, Quantico, VA 22134-5021 or by fax to 703-784-2917 (DSN 278-2917) or by E-mail to **morgannc@mccdc.usmc.mil**. Recommendations should include the following information:

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  - Publication number and title
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Unless otherwise stated, whenever the masculine or feminine gender is used, both men and women are included.

DEPARTMENT OF THE NAVY
Headquarters United States Marine Corps
Washington, DC 20380-1776

17 April 2000

FOREWORD

1. PURPOSE

Marine Corps Warfighting Publication (MCWP) 3-11.3, *Scouting and Patrolling*, provides the doctrinal foundation and the tactics, techniques, and procedures for scouting and patrolling conducted by Marines from the fire team to the company level. Although the information focuses on infantry units, much of the information is also applicable to combat support units that are assigned patrolling missions.

2. SCOPE

MCWP 3-11.3 provides all Marines with the instructional material they need to build the skills necessary to become effective scouts and patrol team members. This publication provides the fundamentals of scouting and patrolling and their relationship to each other. It also addresses organizational structure of teams and patrols, the training required to develop teamwork, and reporting requirements.

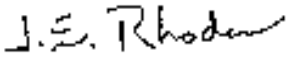
3. SUPERSESSION

MCWP 3-11.3 supersedes Fleet Marine Force Manual (FMFM) 6-7, *Scouting and Patrolling*, dated 6 January 1989.

4. CERTIFICATION

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS



J. E. RHODES
Lieutenant General, U.S. Marine Corps
Commanding General
Marine Corps Combat Development Command

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TABLE OF CONTENTS

PART I. SCOUTING

Chapter 1. Fundamentals of Scouting

1001 Purpose 1-1
1002 Required Scouting Skills 1-1

Chapter 2. Terrain, Maps, and Direction

2001 Terrain Features 2-1
2002 The Lensatic Compass 2-1
2003 Stars, Sun, and Other Features 2-5
2004 Range Determination 2-6

Chapter 3. Enemy Activity

3001 Estimating Enemy Strengths 3-1
3002 Interpreting Signs and Tracks 3-1
3003 Knowing the Enemy 3-2

Chapter 4. Daylight Scouting

4001 Cover and Concealment 4-1
4002 Camouflage 4-2
4003 Individual Movement 4-3
4004 Route Selection 4-5

Chapter 5. Night Scouting

5001 Night Vision 5-1
5002 Appearance of Objects 5-3
5003 Sounds 5-3
5004 Smells and Touch 5-3
5005 Clothing and Weapons 5-3
5006 Concealment 5-3
5007 Aids to Night Scouting 5-4
5008 Aids to Night Movement 5-4
5009 Locating and Plotting the Enemy at Night 5-6
50010 Routes of Movement 5-8

Chapter 6. Observing and Reporting

6001 Observation Posts 6-1
6002 Reporting 6-2

Chapter 7. Scouting Fire Team

7001 Positioning 7-1
7002 Locating Enemy Positions 7-2
7003 Action With an Attacking Platoon 7-2
7004 Action With an Enveloping Unit 7-5

PART 2. INFANTRY PATROLLING

Chapter 8. Fundamentals of Infantry Patrolling

8001 Definitions 8-1
8002 Relation of Patrolling to Scouting 8-1
8003 Purpose 8-1
8004 Types of Patrols 8-1
8005 Training 8-2
8006 Keys to Successful Patrolling 8-3

Chapter 9. Patrol Organization

9001 General Organization 9-1
9002 Task Organization 9-1

Chapter 10. Patrol Preparation

10001 Mission 10-1
10002 Factors Influencing Patrol Size 10-1
10003 Commander's Duties 10-1
10004 Patrol Leader Duties 10-2

Chapter 11. Movement to and Return from the Objective Area

11001 Passage of Lines 11-1
11002 Organization for Movement 11-1
11003 Control Measures for Movement 11-4
11004 Precautions at Danger Areas 11-5
11005 Hide 11-6
11006 Immediate Actions Upon Enemy Contact 11-6
11007 Patrol Leader's Action in a Developing Situation 11-10
11008 Return From Objective Area 11-10

Chapter 12. Reconnaissance Patrols

12001 General Missions 12-1
12002 Specific Missions 12-1
12003 Types of Reconnaissance 12-2
12004 Task Organization 12-2
12005 Size of Reconnaissance Patrols 12-3

12006 Reconnaissance Equipment 12-3
12007 Reconnaissance Patrol Actions at the Objective Area. 12-3

Chapter 13. Combat Patrols

13001 Task Organization 13-1
13002 Equipment 13-1
13003 Raid Patrols 13-1
13004 Contact Patrols. 13-3
13005 Ambush Patrols 13-3
13006 Security Patrols 13-7
13007 Urban Patrols 13-8

Chapter 14. Information and Reports

14001 Reporting 14-1
14002 Captured Items. 14-1
14003 Prisoners 14-2
14004 Patrol Report 14-2
14005 Patrol Critique 14-2

Appendix A. Patrol Warning Order A-1

Appendix B. Patrol Order B-1

Appendix C. Patrol Evaluation Checklist C-1

Appendix D. Ambush Formations D-1

Appendix E. Acronyms. E-1

Appendix F. References F-1

PART I. SCOUTING

CHAPTER 1. FUNDAMENTALS OF SCOUTING

Scouting involves observing terrain and/or the enemy, and accurately reporting those observations. Scouting requires proficiency in the use of weapons, cover and concealment, route selection, and skill in unobserved day or night movement.

1001. PURPOSE

When an infantry unit is not actively fighting the enemy, it should be actively searching for the enemy, which is the primary purpose of scouting. The unit attempts to keep the enemy off balance while making preparations for further attacks. Physically locating and keeping the enemy off balance are normally accomplished by small units ranging from a two-person scouting party to a squad-size patrol.

Infantrymen are sent out as scouts or as members of a patrol because the commander needs information about the enemy, terrain, and the location of friendly troops. The lives of the entire unit may depend upon the success or failure of a scout or patrol and the accuracy and timeliness of the report. The success of the scout or patrol will depend upon their training, preparation by the commander, and understanding their mission and the commander's requirements.

To wage combat successfully, a commander must have accurate, detailed, and timely information about the enemy, the terrain, and adjacent friendly units. Well-trained scouts and capably led patrols are among the most effective means the commander has for acquiring the information necessary to plan tactical actions and make decisions in execution.

1002. REQUIRED SCOUTING SKILLS

To be effective, a scout must be able to—

- Recognize terrain features.
- Read a map and determine direction.
- Practice and implement the principles of cover and concealment.
- Fully utilize movement and route selection.
- Know the enemy (estimate enemy unit composition and strength).
- Observe and report information accurately.
- Select routes and move through numerous types of terrain.

CHAPTER 2. TERRAIN, MAPS, AND DIRECTION

A scout must understand map symbols, identify elevations from contour interval lines, scale distance on a map, relate natural and man-made features shown on the map to the actual features on the ground, plot a course from one point to another, and locate his current position. To relate a map to the actual terrain and its features, a scout must be able to orient it to the ground using a compass, two points, a watch, and the sun or the stars.

2001. TERRAIN FEATURES

Since the infantry works and fights on the ground, terrain ashore information that scouts gather and report on is of great importance. Hills, valleys, woods, and streams are the forms and growths commonly referred to as natural land features. Artificial or man-made features include houses, bridges, and railroads. Figure 2-1 shows some important terrain features.

2002. THE LENSATIC COMPASS

The best method of finding direction, during both day and night, is with a compass. The lensatic and M2 are the two types of compasses issued to infantry units. Both work on the same principle.

The standard compass for general use in the Marine Corps is the pivot-mounted lensatic compass, so called because azimuths are read through a magnifying lens in the eyepiece. Figure 2-2, on page 2-2, shows the lensatic compass and its nomenclature. The meter graphic scale on the side of the compass is 1:50,000, which is the most used scale in military mapping. The graphic scale is useful in the field as a straightedge, an aid in orienting the map, and a means of reading map grid coordinates. The plastic dial is graduated in both degrees and mils. Numbers on the dial are printed in black. There are luminous markings on the bezel, floating dial, and on both ends of the sighting wire, plus a 3-degree bezel serration and clicking device that permit reading azimuths at night. The compass is carried in a nylon case that may be attached to the cartridge belt.

Magnetic compasses are affected by the presence of iron or magnetic fields. Consequently, the scout should not be within the influence of local magnetic

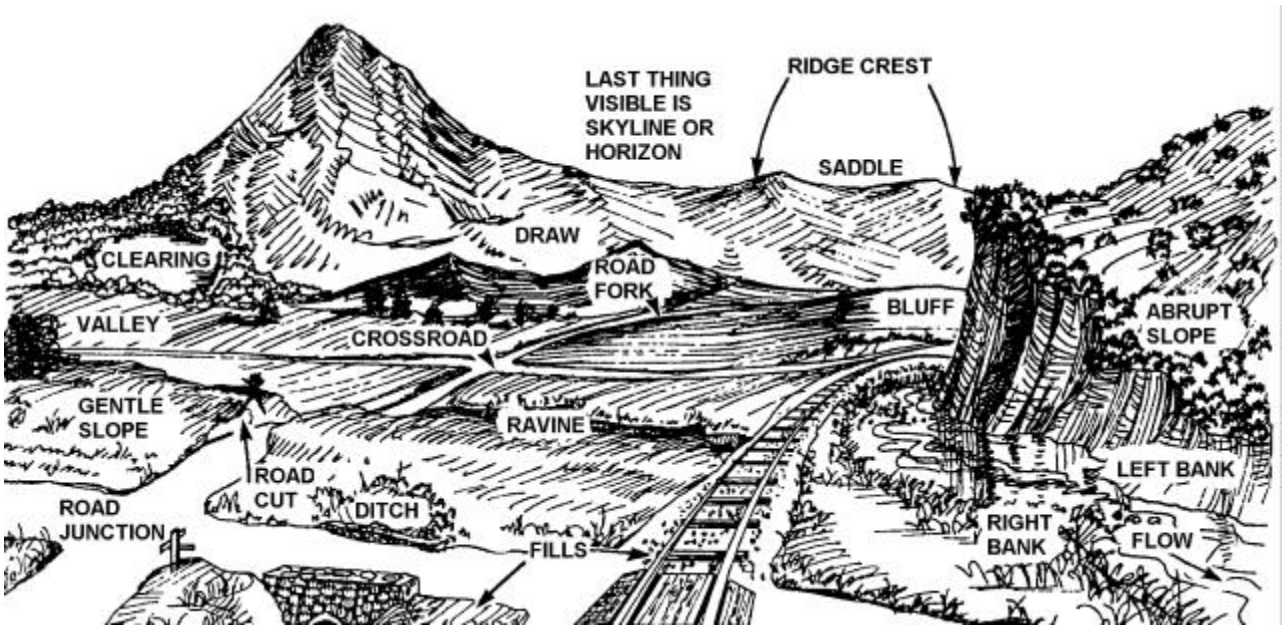


Figure 2-1. Natural and Artificial Terrain Features.

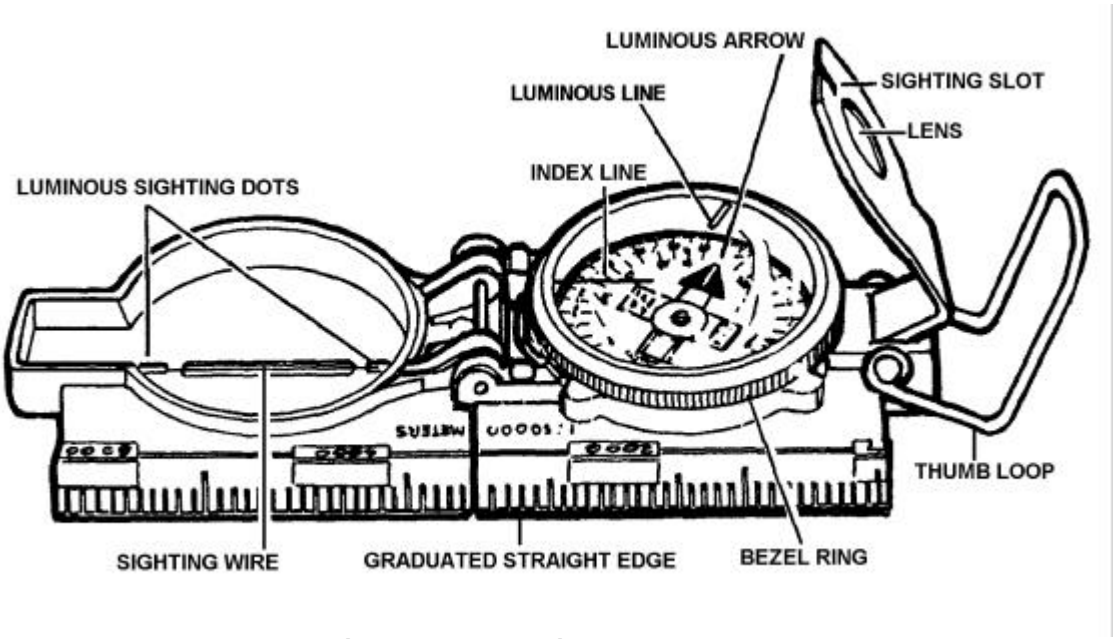


Figure 2-2. Lensatic Compass.

attraction while using a compass to determine direction. The rifle, pistol, and other metal objects must be laid aside when reading the compass. The minimum distances the scout should be from visible masses of iron and electrical fields of magnetism for the compass to provide accurate readings are provided below.

Magnetic Fields	Minimum Distances (meters)
High tension powerlines	60
Field guns	20
Vehicles (wheeled or tracked)	20
Telephone and telegraph wires	10
Barbed wire	10
Machine gun	3
Rifle, pistol	1

Reading an Azimuth

To read an azimuth to any point, the cover of the compass is raised to an angle of 90 degrees in relation to the index face, and the eyepiece is lifted to a 45-degree angle in relation to the bezel, or so the numbers on the dial can be seen. The thumb of either hand is placed in the thumb loop, the index finger extended along the side of the compass case, and the remainder of the hand closed. The closed hand and wrist are grasped with the other hand. The elbows are drawn in close to the body, forming a firm foundation for the compass. The eye is placed to the lens on the eyepiece. The compass is pointed at the object or point to which the azimuth is to be read. A sighting is taken through the sighting slot in the eyepiece, and the point is lined up with the sighting wire in the cover. The compass is held until the dial steadies; then the reading is taken through the lens of the eyepiece. This reading is the magnetic azimuth of the line from the observer to the point.

Reading a Back Azimuth

A back azimuth is the direction opposite the line of sight. If the azimuth is less than 180 degrees, the back azimuth is obtained by adding 180 degrees. If the azimuth is greater than 180 degrees, the back azimuth is obtained by subtracting 180 degrees. Back azimuths are used to determine a return route or to resection to determine a current position.

Circumventing Obstacles

When a scout is traveling on an azimuth and comes upon an obstacle—such as a contaminated area, minefield or swamp—the following steps (sometimes referred to as the *90-degree offset* method) is employed to go around or circumvent the obstacle and

resume movement along the original azimuth (see fig. 2-3). The steps are as follows:

1. Move up to the obstacle and make a full 90-degree turn to the right (or left).

2. Walk beyond the obstacle, keeping track of the distance in paces or meters.

3. Stand at the end of the obstacle, face in the original direction of march, and follow that azimuth until the obstacle has been passed.

4. Make a 90-degree turn to the left (or right) and move the distance previously measured to return to the original line of march.

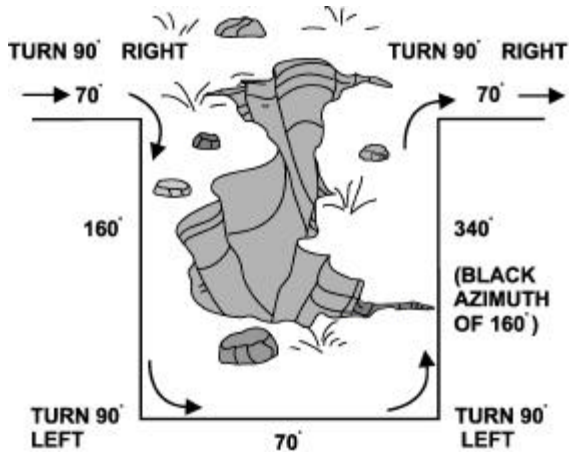


Figure 2-3. Circumventing an Obstacle.

Following an Azimuth During the Day

The eye is placed to the lens in the eyepiece and the compass moved until the desired azimuth reading is visible beneath the fixed index. Without moving the compass, the vision is shifted from the lens through the sighting slot in the eyepiece, and a sighting is taken out beyond the sighting wire in the cover. A prominent terrain feature on this line of sight is selected, the compass closed, and the landmark approached. When the scout reaches the landmark, the procedure is repeated.

Following an Azimuth at Night

It is necessary to prepare and set the compass before departing on a night movement because at night only the luminous parts of the compass can be seen. To prepare the compass for night use, the luminous parts must be fully charged by sunlight or artificial light, such as a flashlight. To set a compass—

1. Move the compass so that the desired azimuth on the dial is directly under the index line on the lower glass.

2. Rotate the upper movable glass so that the luminous line is directly above the north arrow of the dial.

3. Set the compass for marching at night on the specified azimuth.

—OR—

1. Face the general direction of movement.

2. Line up the north arrow and the luminous line on the bezel with the luminous sighting dots.

3. Hold the compass still with one hand and grip the knurled bezel ring with the other hand.

4. Turn the bezel ring the prescribed number of clicks in the proper direction, remembering that each click equals 3 degrees. For example, to set an azimuth of 21 degrees, the bezel ring would be turned seven clicks to the left.

5. Turn the whole compass until the north needle lines up with the luminous line. The compass is then set on the desired azimuth. The azimuth is the line formed by the two luminous sighting dots on the inside of the cover.

To march on a preset azimuth during night movement, open the compass and move it so the north arrow is directly below the luminous line (see fig. 2-4). Move

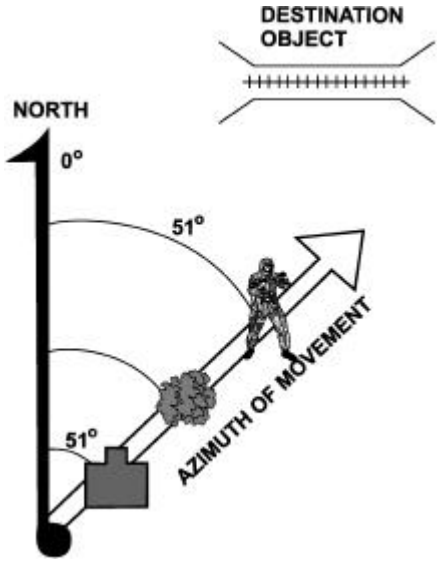


Figure 2-4. Following a Night Azimuth.

in the direction of the line formed by the two luminous sighting dots. It is necessary to refer to the compass more frequently at night than during the day. If stars are visible, find a prominent star along the azimuth of movement to use as a reference point. When the view of the sky is restricted by overcast conditions or vegetation, send a scout forward along the azimuth of movement to the limit of visibility. This scout is guided along the azimuth of movement by a stationary navigator. When the scout reaches the limit of visibility, the navigator moves to the scout's location. This process is repeated until the destination is reached.

A more rapid method for reaching the scout's destination is to equip the navigator with a compass. The navigator can set the compass as explained earlier and the scout proceeds providing security 180 degrees to the front on the specified azimuth, receiving right and left corrections from the navigator while both are on the move. The point scout must stay within visual range of the navigator. If available, a strip of white or luminous tape on the back of the point scout's helmet will assist.

Intersection

Intersection is the location of an unknown point by successively occupying at least two, preferably three known positions and sightings on the unknown point. It is used to locate features not depicted on the map or not readily identifiable. To determine an intersection, perform the following steps (see fig. 2-5):

1. Orient the map using the compass.

2. Locate and mark your position on the map.

3. Measure the magnetic azimuth to the unknown position; then convert to grid azimuth.

4. Draw a line on the map from your position on this grid azimuth.

5. Move to a second known position from which unknown point is visible. Locate this position on the map and again orient the map using the compass. The second unknown position should be a minimum of 30 degrees offset from the first position.

6. Repeat steps 4 and 5.

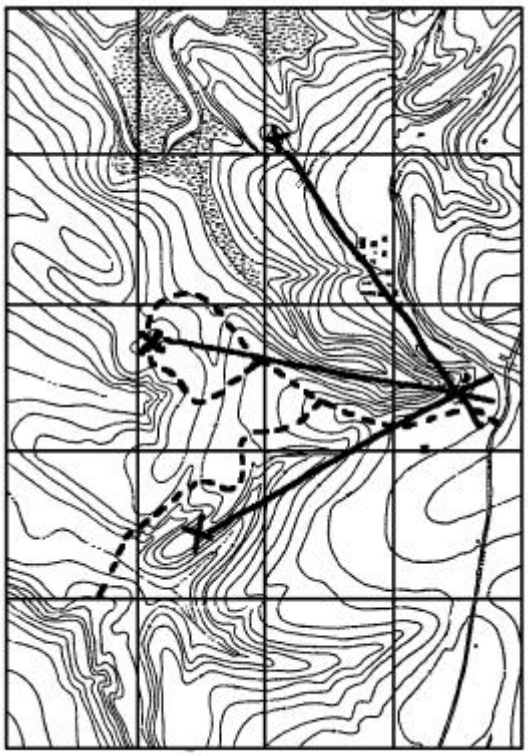


Figure 2-5. Intersection.

To check accuracy, move to a third position and repeat steps 1 thorough 4. Where the lines cross is the location of the unknown position. Using three lines, a triangle is sometimes formed—called the *triangle of error*—instead of an intersection. If the triangle is large, recheck your work to find the error. Do not assume that the position is at the center of the triangle.

Resection

Resection is the location of the user's unknown position by sighting on two or three known features that are identifiable on the map. To determine a resection, perform the following steps (see fig. 2-6):

1. Orient the map using the compass.

2. Locate two or three known positions on the ground and mark them on the map.

3. Measure the magnetic azimuth to a known position then convert to grid azimuth.

4. Change the grid azimuth to a back azimuth and draw a line on the map from the known position back toward the unknown position.

5. Repeat step 3 and step 4 to determine a second known position.

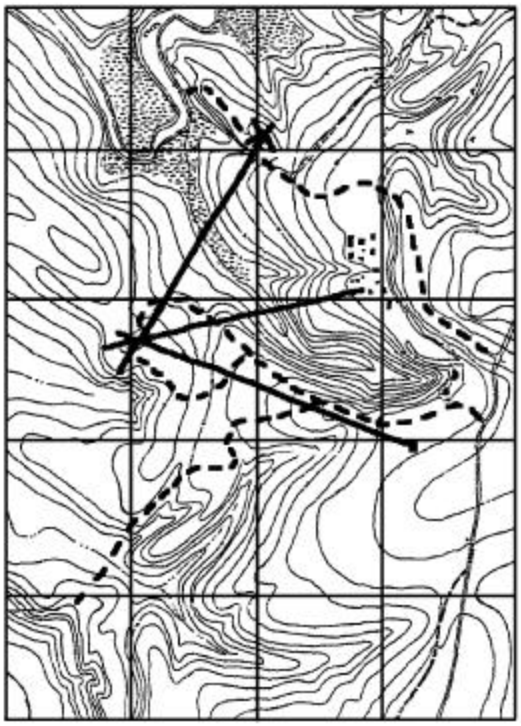


Figure 2-6. Resection.

To check accuracy, repeat the steps above for a third known position. The intersection of the lines is your location. Using three lines, a triangle of error may be formed. If the triangle is large, recheck.

2003. STARS, SUN, AND OTHER FEATURES

In rare cases when a scout is without a compass, the following examples are alternate means to determine direction. When using constellations to determine direction, identify your location's Temperate Zone. A Temperate Zone is the area between the tropics and the polar circles.

At night, the stars provide an excellent means of maintaining a line of march. In the North Temperate Zone (north of the equator), the Big Dipper constellation is one key to determining direction of true north. It is made up of seven fairly bright stars in the shape of a dipper with a long curved handle (see fig. 2-7). The two stars that form the side of the cup farthest from the handle, used as pointers, are situated in the direction of a bright star that is about five times the distance between the two stars of the dipper cup. This bright star is the North Star and is directly over the North Pole. The pointers always designate the North Star, which is the direction of true north.

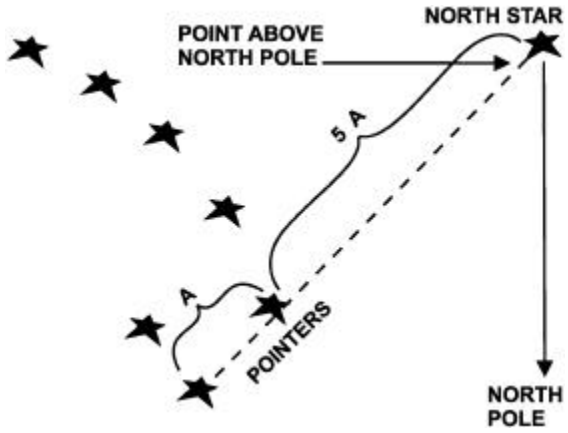


Figure 2-7. Locating the North Pole.

In the Southern Hemisphere, true south is determined in relation to the Southern Cross, a constellation composed of five stars. Two bright pointer stars in the vicinity of the Southern Cross serve as locators to help locate true south (see fig. 2-8). The outer four stars are

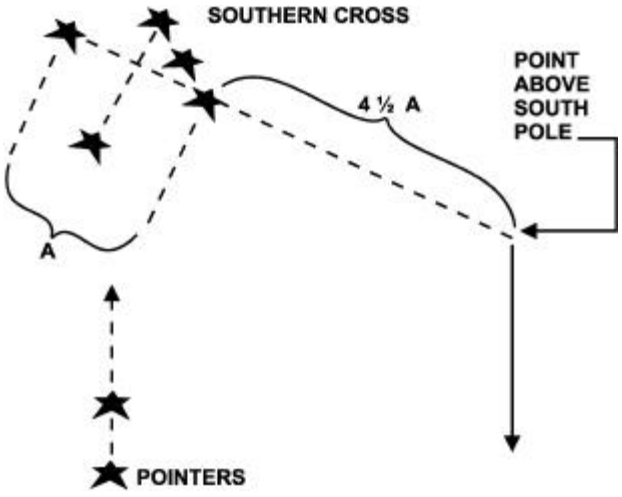


Figure 2-8. Locating the South Pole.

fairly bright and form a cross. This cross is imagined as the frame of a kite. A straight tail, four and one half times as long as the length of the kite itself, is put on the kite using finger widths for a measuring stick. The end of this tail will be close to a position directly over the South Pole. Usually, it will not be possible to see a star in the immediate vicinity, because there is no bright star visible directly above the South Pole.

During daylight hours, a watch and the sun can be used to determine direction within 8 degrees. In the North Temperate Zone, the watch is held horizontally, face up, and the hour hand pointed at the sun (see fig. 2-9). The north-south line and the direction of south can be found midway between the hour hand and the number 12, if the watch is set on standard time. If in daylight savings time, the direction of south is found midway between the hour hand and the number 1.

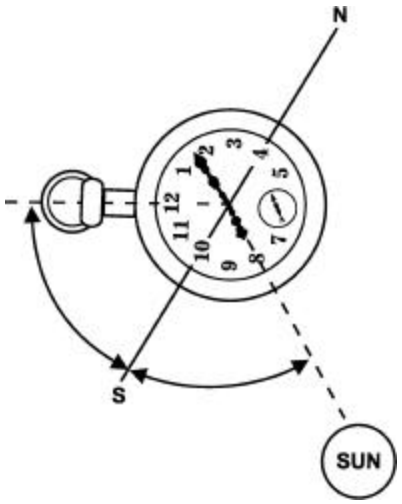


Figure 2-9. Determining Direction by Watch and Sun (North Temperate Zone).

In the South Temperate Zone, if the watch is set on standard time, the number 12 on the watch is pointed at the sun; if the watch is set on daylight savings time, the number 1 is pointed at the sun. North is midway between 12 (or 1) and the hour hand (see fig. 2-10).

When laying in a north-south line, if any doubt exists as to which end of the line is north, remember that the sun is in the east before noon and in the west in the afternoon.

In addition to the sun and stars, other methods a scout without a compass can use to determine direction include determining prevailing wind direction and

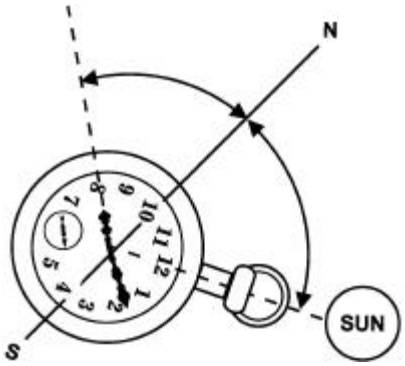


Figure 2-10. Determining Direction by Watch and Sun (South Temperate Zone).

using a mountain for orientation. By previous study of maps and photographs, a scout can keep informed of location and direction by using a distinctive edge of woods, a deep ravine or the direction of a stream's flow. A scout should constantly evaluate and memorize both the immediate terrain and general area for prominent features and landmarks.

2004. RANGE DETERMINATION

Range determination is the method of finding the distance between an observer and an enemy target or an object. By accurate range determination, the members of a given unit can set their sights correctly and place effective fire on enemy targets. The degree of accuracy is dependent on several factors, such as terrain relief, time available, and experience of the observer.

Mental Estimation

A mental distance estimate is made using a known unit of measure. Distance is estimated to the nearest 100 meters by determining the number of known units of measure between the observer's position and a target. For example, a football field, which is 100 yards, can be used as a known unit of measure for determining the distance between an observer's position and a target. For longer distances, progressive estimation may be necessary. To do this, the observer determines the number of units of measure to an intermediate point and doubles the value. The observer should consider the effects in table 2-1 in estimating distances.

Table 2-1. Effects to Consider in Mental Estimation of Distances.

Objects Appear Nearer	Objects Appear More Distant
In bright light.	In poor light or in fog.
In clear air at high altitude.	Only a small part of the object can be seen.
The background is in contrast with the color of the object.	The background is similar in color to that of the object.
The observer is looking down from a height.	The observer is looking over a depression, most of which is visible.
The observer is looking over a depression, most of which is hidden.	The observer is kneeling or sitting, especially on a hot day, when the ground is moist.
The observer is looking down a straight feature such as a road.	
The observer is looking over water, snow, or a uniform surface such as a cultivated field or desert.	

Estimating in Good Visibility

When visibility is good, distances can be estimated by using the appearance of tree trunks, branches, and foliage (as seen by the naked eye) in comparison with map data. Table 2-2 is a guide for wooded terrain. Table 2-3 is a guide for urban environments.

Estimating From a Terrain Study

The Marine should always use terrain/map analysis to assist in estimating distances. When the Marine is looking in a specific direction, the estimation of distance can be enhanced by studying the terrain and comparing it with the map. Particular emphasis should be given to color contrasts of terrain features seen along the observer-target line (OTL). For example, the distance across successive ridge lines or depressions in the distance may be identifiable by only slight changes of color to the eye. Different colors of grass might reveal a hidden terrain feature such as a stream.

Table 2-2. Estimating Distance in Wooded Terrain.

Distance in Meters	Tree Description
1,000	Trunk and main branches are visible. Foliage appears in cluster-like shape. Daylight may be seen through the foliage.
2,000	Trunk visible, main branches distinguishable, foliage appears as smooth surface. Outline of foliage of separate trees distinguishable.
3,000	Lower half of trunk visible. Branches blend with foliage. Foliage blends with adjoining trees.
4,000	Trunk and branches blend with foliage and appears as a continuous cluster, smooth in appearance. Movement of foliage due to wind cannot be deleted.
5,000 and beyond	Whole area covered by trees and appears smooth and dark.

Table 2-3. Estimating Distance in Urban Terrain.

Distance in Meters	Object Identified by the Unaided Eye
1,000	Lone tree trunk
1,500	Individuals and horsemen
3,000	Chimneys on rooftops
4,000	Windows in houses
4,000–5,000	Individual houses in populated area
8,000–9,000	Villages and individual houses
15,000–18,000	Large houses, towers, and steeples

CHAPTER 3. ENEMY ACTIVITY

A commander often acts on information furnished by scouts. Therefore, scouts must aim at absolute accuracy in reporting enemy activity. This chapter discusses estimating enemy strengths, interpreting signs and tracks, and knowing the enemy.

3001. ESTIMATING ENEMY STRENGTHS

If troops cannot be counted, their strength may be estimated by: noting the length of time it takes various types of moving columns to pass given point, the area required of a unit in camp or bivouac, or the front on which they are deployed. When the ground is dry, infantry on the march raise a low, thick cloud of dust, and motor vehicles or mechanized units raise a thick, rapidly moving cloud. Additionally, through practice, a scout may gain information as to the strength and composition of enemy forces by listening to noises and observing lights, fires, and smoke. A scout gains valuable experience in estimating enemy strengths by observing friendly forces in camp, on the march, and deployed. The knowledge scouts gain during field exercises of the appearance and tactical dispositions of squads, platoons, companies, and larger units will be of great assistance in estimating the strength and composition of enemy units observed under various conditions.

3002. INTERPRETING SIGNS AND TRACKS

In addition to estimates made through direct observation, a scout may often be able to estimate size, composition, direction, rate of movement, condition, discipline, state of training, and morale of enemy forces through signs and tracks left behind.

Signs

The examination of vacated enemy positions provides valuable information. The size of a bivouac or defense area ordinarily indicates the number of enemy occupants. Clothing, ration containers, dumps, etc., further indicate the quantity of the departed enemy force. The condition of the bivouac area and amount of material abandoned give an indication of the enemy morale, training, and discipline. A well-policed area indicates good discipline. Rubbish, ration and smoking residue, and nonessential personal items of equipment adrift indicate a lower state of morale, training, and discipline. Stores and material left behind in good condition may indicate a hasty movement or withdrawal. Burned or destroyed materials indicate a deliberate, orderly withdrawal or movement. Letters, insignia, and other articles may reveal the identity of the enemy unit.

In the case of a moving enemy, the distance between periodic halts indicates the rate of march if enemy habits relative to marches and halts are known. Condition of the halt areas indicates the state of morale, training, and discipline.

The physical condition of enemy dead and wounded and their personal equipment and weapons are reported. The general condition and state of maintenance of destroyed or abandoned vehicles should also be reported.

Tracks

A track is a mark left on the ground by the passage of a person or object. Examination of tracks reveals information about the enemy.

Troops

A few tracks overlapping each other on both sides of a road or trail may indicate a patrol in staggered formation. A large number of tracks indicates troops in column formation. A large column will wear a dry road smooth and flat. In damp terrain, a freshly made track will have sharp edges; ordinarily, signs of moisture will disappear in about 15 minutes. A runner's toes are dug into the ground; a walker's footprint is fairly even.

Vehicles

The type of track indicates whether the vehicle is wheeled or tracked. A scout acquires the necessary experience to make the proper determination by observing vehicle tracks during training.

The direction of travel can be determined by the way tracks pass across ruts, by impressions on the edges of holes in the ground, how water is splashed from puddles, or by the way grass, twigs, and branches are bent; for example—

- A vehicle (wheeled or tracked) entering a rut pushes dirt into the rut and leaves an indentation on the exit side of the rut.
- A wheel going over holes in the ground leaves a deeper impression on the edge toward the direction of travel.
- The side of a puddle with the greater splash indicates the direction of travel of the vehicle.
- When traveling cross-country, the direction in which grass is bent and/or twigs, branches, and bushes are broken indicates direction of travel.

A general rate of speed can be estimated by the amount of water or mud splattered. A fast-moving vehicle will throw larger amounts of water or mud a greater distance to the front and sides than a slow-moving vehicle, and it leaves a deeper impression on the exit edges of holes. The faster the travel, the deeper the impression.

3003. KNOWING THE ENEMY

A scout should learn as much as possible about enemy psychology, habits, organization, and tactics. The more knowledge gained about the enemy, particularly the enemy's normal security measures, the better the scout's chances are to observe and obtain accurate information with minimum risk to the mission's success. Scouts gain much of this knowledge through experience, but they also gain a great deal of their preliminary information, particularly that pertaining to enemy organization and tactics, during training and may be updated by unit commanders and intelligence officers.

CHAPTER 4. DAYLIGHT SCOUTING

A scout must be able to operate in all types of terrain and under all conditions of visibility. He must be thoroughly familiar with the principles for using cover and concealment, camouflage, individual movement, and route selection, both to and from the objective.

4001. COVER AND CONCEALMENT

Cover is protection from the fire of hostile weapons. Concealment is protection from observation or surveillance from hostile air and ground observation, but not from hostile fire. Both cover and concealment are divided into two main categories: natural and artificial. Natural cover includes small hills, ditches, rocks or vegetation. Fighting holes, bunkers, and brick walls are examples of artificial cover. Some features, such as buildings, provide both cover and concealment. In deciding whether to seek cover or concealment, a scout must make the best choice to complete the mission (see fig. 4-1).

Concealment Principles

Concealment principles are as follows:

- Remain motionless while observing. Anything in motion attracts the eye.
- Use all available concealment.
- Observe from the prone position (it offers a low silhouette and makes detection by the enemy difficult.
- Expose nothing that reflects light.
- Blend with the background because contrasting colors are noticeable.
- Remain in the shade because moving shadows attract attention.
- Distort or change the regular outline of objects. Most military objects have distinctive shapes that make obvious shadows and silhouettes.
- Avoid the skyline. Figures on the skyline can be seen from great distances and are easily identified by their outlines.

Concealment Techniques

Concealment techniques are as follows:

- When observing, the scout looks around an object's side (unless it is transparent) and prepares to fire, if necessary, around the side of or, if possible, through an object.
- Looking or firing over an object can make the scout an easily visible target for the enemy. If the scout must fire over the top of concealment or cover, the outline of the head or helmet should be broken or distorted.
- Upon the approach of an airplane, the scout takes a prone position, turns face-down, and remains motionless. If surprised by an airplane, the scout remains in place and does not look up.

CORRECT OBSERVING POSITION PRONE AROUND RIGHT SIDE OF TREE
FROM A DITCH OBSERVE OVER BROKEN EDGE WITH BACKGROUND
OBSERVE THRU BUSH IN PRONE POSITION
OBSERVE OVER A CREST AT A POINT WHERE IT IS BROKEN OR GRASSY
OBSERVE PRONE AROUND RIGHT SIDE OF ROCK
OBSERVE PRONE UNDER CROSSBAR OF FENCE

Figure 4-1. Correct Use of Cover.

- The scout covers exposed body parts such as the face, back of the neck, and hands with grease paint, mud or other materials to reduce sun reflection.
- Camouflage for equipment can be improvised from garnishing or sandbags to prevent sun reflection.
- In snowy terrain, white overgarments are worn.
- The helmet cover outline should be distorted.

4002. CAMOUFLAGE

Camouflage is the use of concealment and disguise to minimize the possibility of detection and/or identification of troops, material, equipment, and installations. The purpose of camouflage is to provide concealment of military objects from enemy observation. Camouflage is also used to conceal an object by making it look like something else. A scout's mission usually requires individual and equipment camouflage. If natural camouflage is not adequate, the position is camouflaged. In using camouflage, remember that objects are identified by their form (outline), shadow, texture, and color. The principal purpose of camouflage in the field is to prevent direct observation and recognition.

Individual Camouflage

Successful individual camouflage involves the ability to recognize and take advantage of all forms of natural and artificial concealment available (vegetation, soil, debris, etc.) and knowledge of the proper use of artificial camouflage materials.

Aids to Individual Camouflage

A scout must recognize the terrain's dominant color and pattern and must change the appearance of clothing and equipment accordingly in order to blend and not contrast with the terrain (see fig. 4-2).

The helmet is camouflaged by breaking up its shape, smooth surface, and shadow. Use of a helmet cover works best. In the absence of a helmet cover, mud can be irregularly blotched on the helmet to disguise its form and dull the surface. A helmet cover may be improvised from irregularly colored cloth or burlap to blend with the background. Foliage can be draped to prevent the visor of the helmet from casting a dark shadow across the face. Foliage should not stick up like plumes because any head movement will give away the position.

A small, thin bush in the shadow of a large bush makes a good observation point. Lone trees, rocks, fence corners, and outstanding landmarks are easily picked up by the enemy as obvious observation posts.

If camouflage clothing is not available, other available clothing can be attached in irregular splotches of appropriate colors.

Exposed skin reflects light and attracts the enemy's attention. Even very dark skin will reflect light because of its natural oil. The buddy system is recom-mended when applying camouflage. Standard Marine Corps issue camouflage face paint sticks are two toned:

- Loam and light green for light-skinned troops, in all but snow regions.
- Sand and light green for dark-skinned troops.
- Loam and white for troops in snow-covered terrain.

Shiny areas (forehead, cheekbones, nose, and chin) are painted with a dark color. Shadow areas (around the eyes, under the nose, and under the chin) are painted

Figure 4-2. Avoid Contrasting Backgrounds.

with a light color. Skin that is exposed on the back of the neck and hands is painted with a two-color combination in an irregular pattern (see fig. 4-3).

When standard issue face paint sticks are not available, burnt cork, charcoal or lamp black can be used to tone down exposed areas of skin.

Mud is used only in an emergency because it changes color as it dries and may peel off, leaving the skin exposed. Since mud may contain harmful bacteria, mud should be washed off as soon as possible.

Any equipment that reflects light should be covered with a nonreflective material that aids in the concealment of the weapon (for example, black electrical tape or mud). The straight line of the rifle or other infantry weapons may be very conspicuous to an enemy observer. The barrel and hand guard should be wrapped with strips of contrasting colored cloth or tape to break the regular outline. Mud or dirt dulls the reflecting surface of the stock, barrel, and bayonet where coloring has been worn. Lamp black may also be used on metal parts. The function of the weapon must not impaired.

Figure 4-3. Face Camouflage.

If time, material, and surroundings permit, a ghillie suit should be constructed. (Refer to MCWP 3-15.3, *Scout Sniping*.)

Aids to Camouflage a Position

To successfully camouflage a position, the scout must remember to—

- Camouflage the position as soon as it is occupied.
- Avoid using too much material for camouflage. Even though natural materials are used, too much may make the object and its shadow stand out from its surroundings, thus attracting the attention of a hostile observer.
- Inspect completed camouflage work from the enemy's point of view to check effectiveness.

Continuous Camouflage

Camouflage around and on the scout's position must be maintained in a fresh condition as wilted and dead foliage can give the position away. If the mission dictates that the position should be occupied for longer periods, wilted foliage should be replaced during periods of reduced visibility.

4003. INDIVIDUAL MOVEMENT

Principles

The principles of individual movement are as follows:

- Scouts move from one concealed position to another. When not changing positions, they remain motionless.
- The scout's head is lifted slowly but steadily, without abrupt movements, to search for a new position.
- Scouts select the next stopping place before moving and ensures it is not contained by the enemy.
- Scouts change position on the run: springs up, runs with the body bent low, zigzags, quickly drops to the ground slightly to the right or left of the objective, then rolls or crawls to the desired position.

(Remember the phrase, “I’m up—he sees me—I’m down.”)

Rushing

When starting from the prone position—

- Raise the head slowly and steadily and select a new position.
- Lower the head slowly, draw arms inward, cock right leg forward, and prepare to rush.
- Use one movement to raise the body by straightening both arms.
- Spring to your feet, stepping off with the left foot.
- Bend forward as low as possible when running. Never advance directly to the next position; always zigzag.

When hitting the deck—

- Stop.
- Plant both feet in place.
- Drop quickly to the knees and slide the hand to the heel of the rifle.
- Fall forward, breaking your fall with the butt of the rifle. (To confuse the enemy, roll over after hitting the deck and roll into firing position with feet, knees, and stomach flat on the ground.)
- Keep head down if you do not intend to fire.

When rolling over—

- Hit the deck and assume the prone position.
- Bring the rifle in close to the body, placing the rifle butt in the crotch.
- Roll over swiftly to confuse any enemy observers as to final intended location. Never reappear at the same place you went down.

Low Crawl

The low crawl is used when—

- Cover and concealment are scarce.
- The enemy has good observation over the area in which the scout is moving.
- Speed is not essential.

To perform the low crawl, keep the body as flat as possible against the ground. Grasp the rifle sling at the upper sling swivel. Let the balance of the rifle rest on the forearm and let the butt of the rifle drag on the ground. Keep the muzzle off the ground.

To start forward, push arms forward and pull right leg forward. To move forward, pull with arms and push with right leg. Change the pushing leg frequently to avoid fatigue.

High Crawl

The high crawl is used when—

- Cover and/or concealment are available.
- Poor visibility reduces enemy observation
- Greater speed of movement is required.

To perform the high crawl, keep body off the ground. Rest weight on forearms and lower legs. Cradle rifle in arms, keeping the muzzle off the ground. Keep knees well behind the buttocks to stay low.

Move forward, alternately advancing right forearm and left knee; then left forearm and right knee.

Movement Aids

Aids to movement include—

- Carrying only necessities. Additional weight causes premature fatigue and impedes free movement.
- Not disturbing birds or animals whose flight would betray your presence. If birds or animals are alerted, remain motionless under cover for a few minutes, as the enemy’s attention may also be attracted.
- Moving during an incident that diverts attention, such as an airplane flight, a distant disturbance or sudden bursts of fire.
- Fog, smoke, or even light haze offer concealment for movement; however, the enemy may have thermoimagery and night vision devices. Therefore, darkness and smoke cannot be used as easily.
- Following a stream or road by staying as far away from them as possible while still keeping them in sight. Keep close to the dune line when moving along a beach.
- When moving through tall grass or similar growth, move when the wind blows, changing direction frequently. A straight route will be more readily noticed.
- Whenever possible, avoid areas of soft ground so as not to leave tracks.

- When crossing a road or water obstacle, choose crossing sites where the enemy's observation is restricted (an area in shadows or near a bend) and cross rapidly.

4004. ROUTE SELECTION

Prior to Movement

A scout and the immediate commander conduct a map reconnaissance before starting on a mission. This assists them in selecting the route according to available cover and concealment and any indicated enemy activity.

Prior to and during the course of the mission, move to an observation point to visually reconnoiter the terrain for movement and select the tentative route. It may be necessary to make wide detours around open spaces or those containing enemy patrols or other enemy activity.

Carefully study the country to be traversed and pay close attention to the general features, streams, ridges to be crossed, and their relation to the general direction to be taken (see fig. 4-4).

Make notes of terrain features and landmarks along the proposed route and rely on notes for guidance (see fig. 4-5 on page 4-6). Additionally, determine the compass direction and readings for each change of direction at the start. Finally, learn the location of unit boundaries and observation/listening posts as well as general location of other friendly or scouting parties. Be sure to avoid man-made and natural obstacles as they will slow progress and overall success of the mission. If possible, use the local populous as a source of intelligence. When returning to friendly lines, avoid using the same route.

En Route

En route, the actual advance will be a series of movements from one observation point to the next. The distance and route will depend on cover and terrain. Assess the cover, terrain, and any enemy or civilian activity to determine whether or not to modify the approach or return routes. Unless the mission requires it, avoid danger areas (for example, houses, villages, potential assembly or bivouac areas, roads, and streams) that may give away your position by being

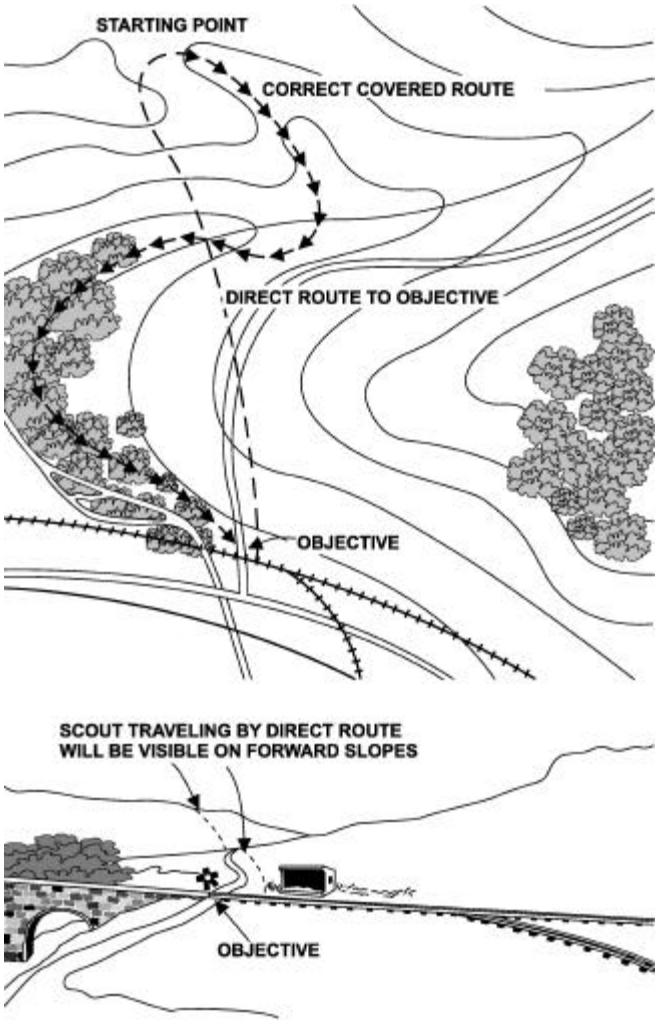


Figure 4-4. Choosing a Concealed Route of Advance from a Map.

observed by the enemy. When required to reconnoiter danger areas, choose a covered approach and return, and make entry or passage as quietly and quickly as possible. If part of a larger effort, the approach and return should be covered by observation and fires of the other members of the scouting party or patrol.

Stream Crossings

When the crossing does not appear to be held by the enemy, advance upon it rapidly. If there are two or more scouts, one crosses while the other(s) provide protection. Note the length, width, depth, and approaches to a crossing. Observe the condition of the road or trail that crosses the stream, and report on the suitability of the crossing for use by tracked and wheeled vehicles. If the crossing is under observation by enemy, seek another crossing site or dash across to avoid detection.

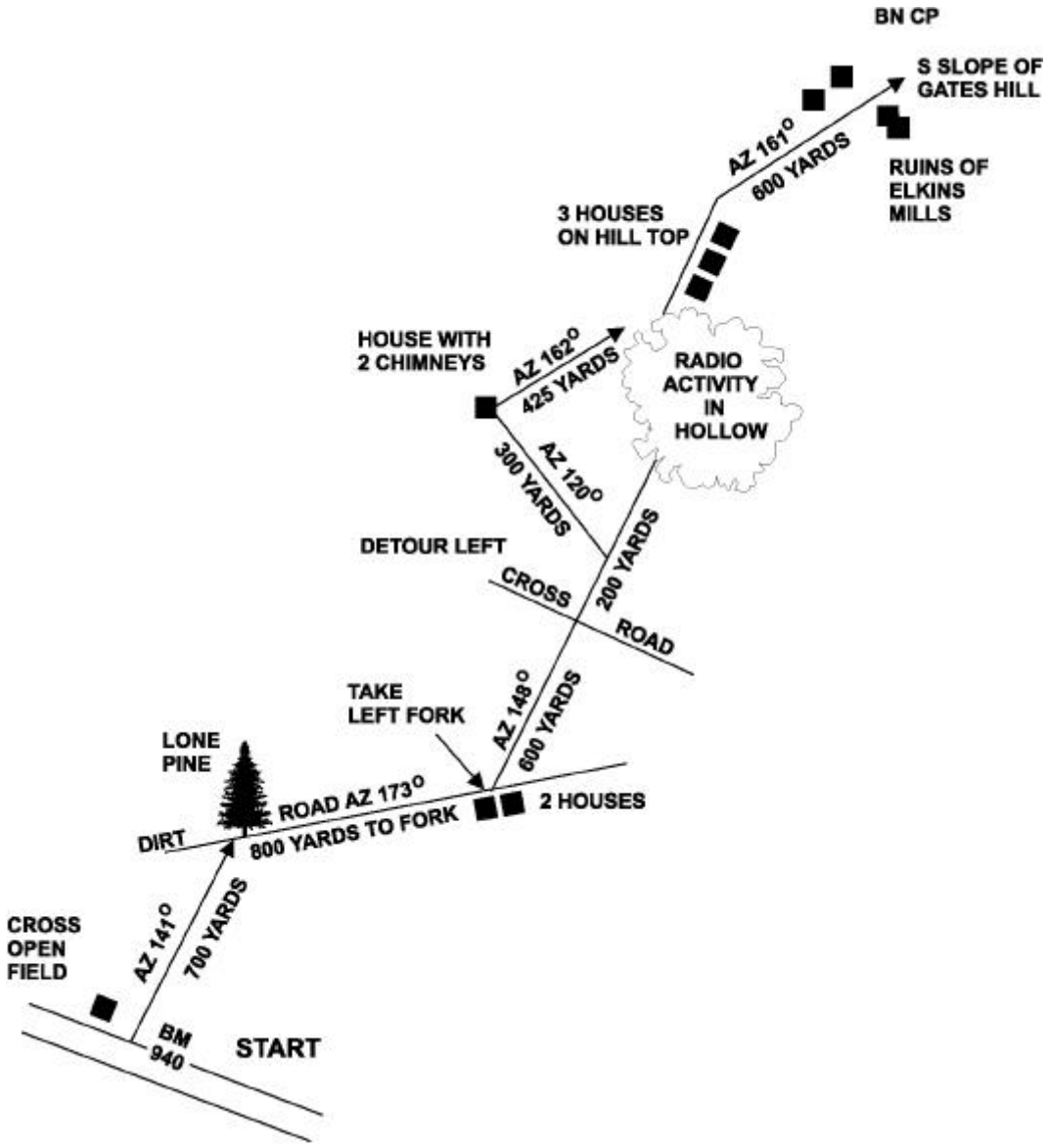


Figure 4-5. Proposed Route Sketch.

CHAPTER 5. NIGHT SCOUTING

Night scouting presents many of the same problems encountered in day operations-such as cover, concealment, movement, and camouflage-as well as additional considerations. Knowledge of human eye construction and operation will enable maximum advantage under night conditions or poor visibility.

5001. NIGHT VISION

Certain parts of the eye correspond to parts of a simple camera (see fig. 5-1). The lens focuses light entering the eye similar to a camera lens. The iris (colored part of eye) corresponds to the diaphragm of a camera, opening and closing to regulate the amount of light entering the eye through the pupil. The retina corresponds to camera film. Light rays strike the retina, form an image, and cause an impression to be transmitted to the brain through the optic nerve. In a camera, the image is formed and fixed on film.

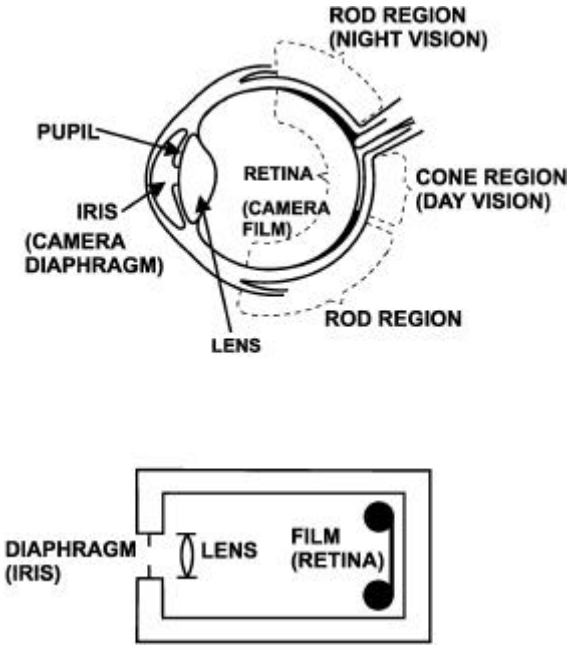


Figure 5-1. The Eye is Like a Camera.

The retina is composed of cone cells and rod cells, so-called because of their shapes. Cone cells distinguish color, shape, and sharp contrast. Because they are activated by light conditions, they are blind during periods of low illumination. Rod cells produce a chemical substance called visual purple that makes them active in darkness, low illumination or night conditions. Rod vision distinguishes black, white, shades of gray, and general outlines.

Principles

To effectively "see" at night, the principles of night vision dark adaptation, off-center vision, and scanning are applied.

Dark Adaptation

Allowing the eyes to become accustomed to low levels of illumination is called dark adaptation. It takes the rod cells about 30 minutes to produce enough visual purple to activate them and enable the eye to distinguish objects in dim light. This may also be accomplished by staying in a red-lighted area, or by wearing red goggles for 20 minutes, followed by 10 minutes in darkness (which allows the pupils to open wide). This method saves valuable time by allowing Marines to be in a lighted area to receive orders, check equipment, or perform some other function before moving into darkness.

Off-Center Vision

The technique of focusing on an object without looking directly at it is called off-center vision. When looking directly at an object, the image is formed on the cone region, which is not sensitive at night (see fig. 5-2 on page 5-2). When looking slightly to the left, right, above or below an object, the image is formed on the area of the retina containing rod cells, which are sensitive in darkness. The most sensitive area varies in individuals, but is usually found by looking 6 to 10 degrees away from an object; in effect, out of the corner of the eye (see fig. 5-3 on page 5-2).

Scanning

Off-center vision used to observe an area or an object is called scanning. When using rod vision, the visual purple in the rod cells bleaches or blacks out in 4 to 10 seconds and the object observed disappears. As the visual purple in the rod cells in one area bleaches out, the eyes must slightly shift to use fresh rod cells. Eyes

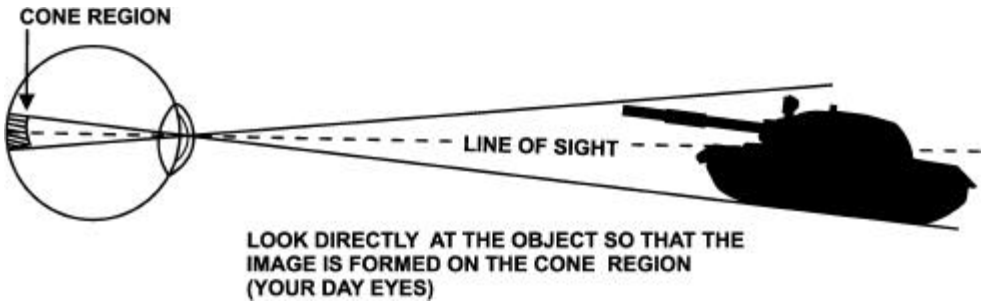


Figure 5-2. Day Vision.

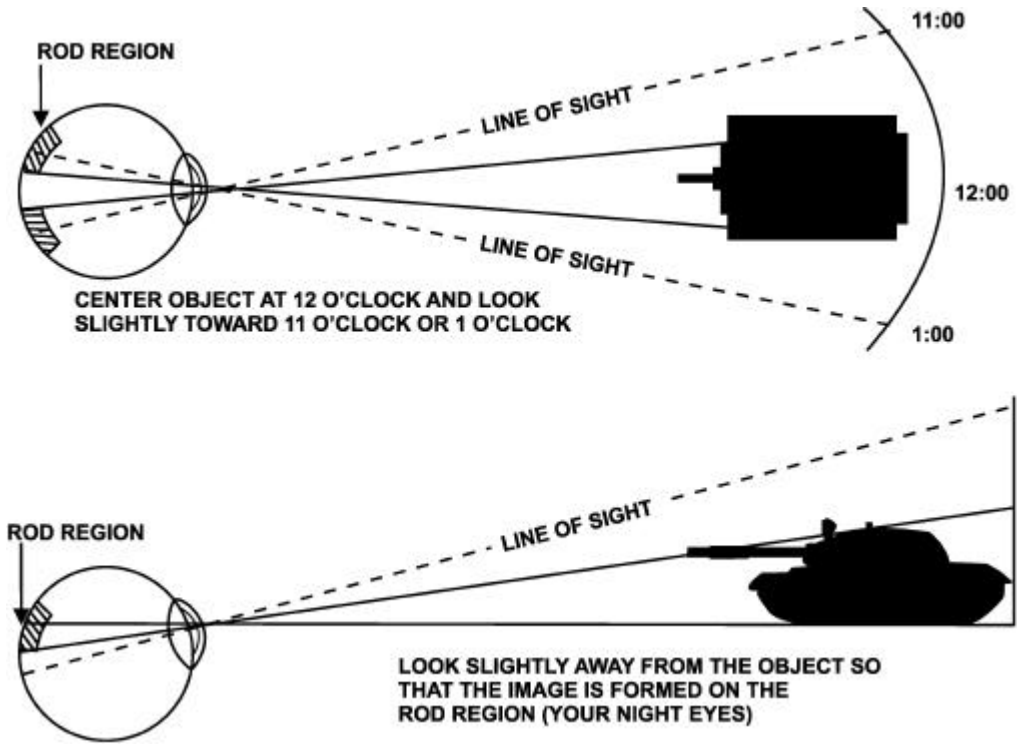


Figure 5-3. Night Vision.

should be moved in short, abrupt, irregular movements over and around the target (see fig. 5-4).

Preserving Night Vision

Night vision is quickly destroyed if bright light is allowed to enter the eye. When entering a lighted area or when observing in a temporarily lighted area (illumination, flares), one eye should be closed and covered to preserve its night vision. When the light goes off, fades or the lighted area is exited, the night vision retained by the protected eye enables it to see until the other eye adapts to the darkness. Red light helps preserve night vision, but like white light, it can be observed at long distances.

Factors that decrease night visual acuity include fatigue, lack of oxygen, long exposure to sunlight, alcohol, nicotine (within the past 48 hours), and age. When night vision has been attained, straining will not improve effectiveness; however, practice identifying objects at night will improve perception.

5002. APPEARANCE OF OBJECTS

Darkness not only makes objects difficult to see but also changes their appearance, distorts size, and blots out details. A tree visible against the night sky appears smaller than in the daytime because the twigs at the end of branches cannot be seen. A scout must train to identify objects by block outlines at night and cannot rely on details visible in daylight. Binoculars enlarge objects or parts of objects otherwise too small to be seen and help identify objects already spotted. Night observation devices increase night visibility and should be used whenever possible.

5003. SOUNDS

At night, sounds become very important. By listening, a scout gains information about the enemy and by exercising care, keeps information from the enemy. A scout stops frequently to listen. Scouts must listen for long periods in perfect silence. Hearing is amplified with the mouth open; removing the helmet will reduce sound distortion. Sounds are transmitted a greater distance in wet weather and at night than in dry weather and in the daytime. By holding the ear close to the ground sounds of people walking and vehicles moving can be heard. Sound travels approximately 370 meters a second. When a flash from a fired weapon is observed, the range to the weapons can be easily estimated by counting the time interval between the flash and hearing the report. For example, counting to three (one thousand one, one thousand two, one thousand three), indicates the distance is 1,110 meters. The cadence is determined by actual practice at known ranges.

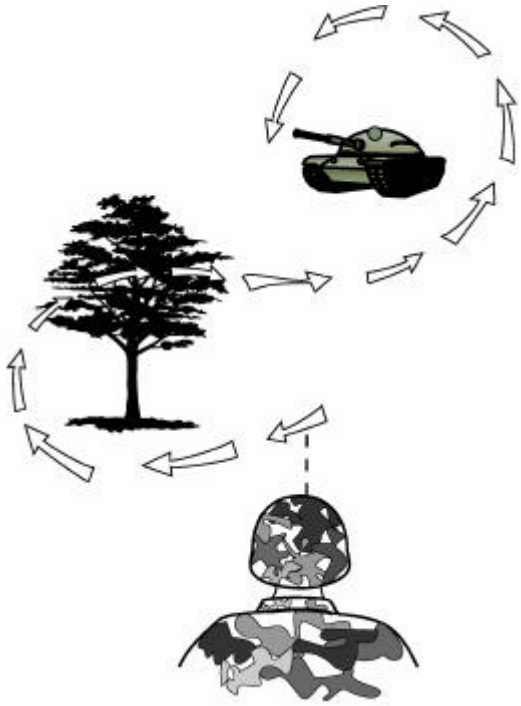


Figure 5-4. Scanning

5004. SMELLS AND TOUCH

A scout's sense of smell can warn of enemy fires, cooking, motor parks, gasoline and diesel engines, and bodies of water. A scout must feel and recognize objects in the dark, and adjust and operate equipment quietly by sense of touch.

5005. CLOTHING AND WEAPONS

All loose clothing must be secured (string or tape can be used) to prevent snagging on barbed wire, brambles, and brush. Helmet covers are worn to muffle sounds made by low branches.

The belt buckle should be turned around to the side in order to move in a prone position without scraping the buckle against stones or hard surfaces. Identification tags can be taped together to prevent rattling. Hands, face, and neck can be blackened so skin does not reflect light or appear as white spots in the darkness. (Refer to para. 4002.)

Scouts are normally armed with rifles. Rifle slings should be taped to prevent rattling. All weapons parts should be checked for glare elimination measures.

5006. CONCEALMENT

Although total darkness provides concealment, scouts must observe the same principles of concealment

during moonlight conditions as in the daytime. Scouts should assume enemy employment of night observation devices and observe the principles of night movement such that presence will not be disclosed by noise when close to the enemy.

5007. AIDS TO NIGHT SCOUTING

Aids to night scouting include the following:

- Carry out scouting missions close to or within hostile positions on dark or rainy nights.
- Stifle a threatening sneeze by pressing fingers upward against the nostrils.
- Stifle a threatening cough by applying slight pressure with the finger on the Adam's apple.
- Stop a ringing sound that interferes with hearing by yawning.
- Speak softly rather than whispering if voice communication is necessary.
- Move boldly and rapidly when taking advantage of any sound-such as shelling, rustling wind or distant firing-to push forward if firing is taking place.
- Avoid shell craters and depressions in damp weather conditions if the enemy has employed chemical munitions.
- Move the eyes constantly; concentrating on one object too long will strain them.
- Take notice of the enemy's use of flares. When the enemy employs flares, few enemy patrols are apt to be out; when flares are not employed, the enemy's patrols are likely to be numerous.
- Drop to a prone position upon hearing a flare being fired and before it illuminates. Remain motionless while it is burning. If open or moving when a flare bursts in the air, freeze or drop quickly in the split second after the flare illuminates while the enemy is blinded. You are an easy target for the enemy if the flare bursts in the air or on the ground behind you. Never look at a flare. If you activate a trip flare, drop to the ground and crawl away from the illuminated area.
- Consider all patrols or individuals encountered as hostile until proven friendly. If encountering someone, crouch low, silhouetting the approaching person against the sky. At the same time, make yourself an indistinct target in case the person encountered is an enemy.
- Return fire only to avoid capture if fired on when close to enemy positions.

5008. AIDS TO NIGHT MOVEMENT

- Aids to night movement include the following:
- Move silently.
- Advance in stealthy legs. Each leg should follow some terrain feature that serves as a guide. When there are no terrain features to serve as guides, move in a straight or nearly straight line from one defined point to another, or maintain direction by using a compass.
- Avoid running, except in an emergency.
- Take advantage of sounds that may distract the enemy.
- Fall silently without making an outcry.

Walking

When walking at night—

- Place the heel down first. Balance the weight of the body on the rear foot until a secure spot is found.
- Lift the forward foot high to clear any stiff grass, brush, or other obstruction.
- Continue to balance body weight on the rear foot, lower the forward foot gently, toe first, to explore the ground for objects that might make noise. Step over fallen logs and branches, not on them.
- Lower the heel of the forward foot slowly; gradually transferring body weight to that foot.

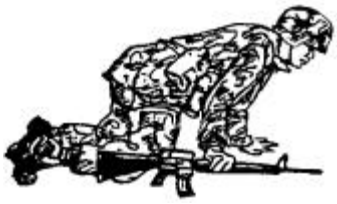
Creeping

The low crawl and high crawl are not suitable at night when very near the enemy because an easily heard shuffling noise results. Creeping is the recommended method of movement:

- Creep at night on the hands and knees.
- Use your hands to feel for twigs, leaves or other substances that might make a noise. Clear a spot to place your knee. Keeping your hand at that spot,

bring your knee forward until it meets your hand. Then place your knee on the ground and repeat the action with the other hand and knee.

- Lay the rifle on the ground at your side and clear an area for it. Lift the rifle up and move it forward. Movement is slow and tedious, since it must be done silently.



Hitting the Deck at Night (Right-Handed Shooter)

To safetly hit the deck at night from the standing position—

- Advance your left leg, place the butt of the rifle in your right armpit with the hand remaining on the pistol grip, and grasp it with the right hand at the balance.
- Quietly drop down on the right knee and left hand.

- Move the left leg carefully to the rear, and then move the right leg to the rear.

- Lie flat on the ground, or take up a firing position if necessary.

Wire Obstacles

A mission often requires a scout to pass through and work behind enemy positions. To accomplish this, the scout must be able to quietly pass through enemy wire obstacles and cross trenches. Cutting a gap in wire is time-consuming. If possible, walk over the low bands of enemy wire and crawl under the high bands (see fig. 5-5). Avoid movement along wire barriers, as enemy

Figure 5-5. Crossing Wire Silently at Night.

covering fires are generally planned parallel to them to take advantage of canalization and enfilade fire.

To step over low wire at night, crouch low to view the strands against the sky. Grasp the top strand with one hand; with the other hand, reach forward and feel for a clear spot for foot placement without stepping on other strands or any object apt to make a noise. Raise the body up, still grasping the top strand of wire. To avoid catching the foot in another strand, lift the foot up and over, passing it close to the hand grasping the wire.

If a high wire obstacle is encountered at night and wire cutters are not available, pass under the wire with your back on the ground. Grasp the lowest strands in your hands and hold them clear of the body while you slide under them.

When cutting wire and working solo, cut a wire near a post (see fig. 5-6), then dispose of all but one loose end. Grasp the wire close to a post and cut between your hand and the post, muffling the sound and keeping the loose wire in your grasp. When cutting wire in tandem, one firmly holds the wire with the hands positioned close to the cutters, in order to muffle the sound and prevent the loose ends from flying back, while the other one cuts. In both instances, the loose ends of the wire are bent back to form a passage.

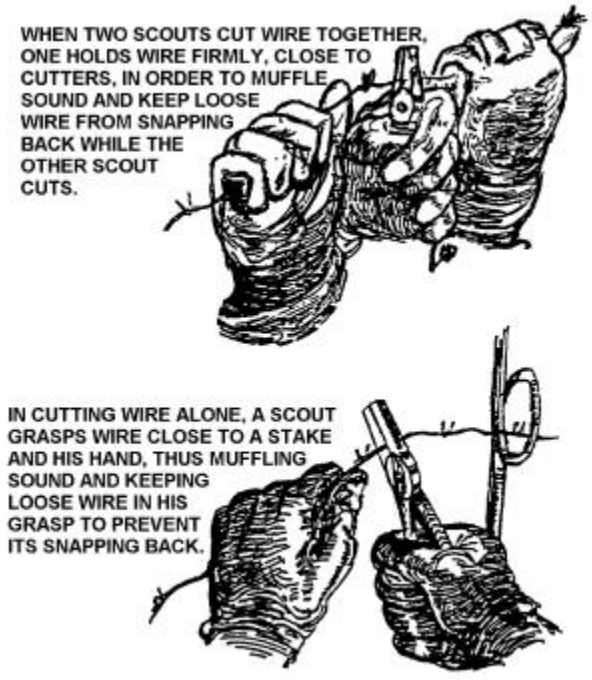

WHEN TWO SCOUTS CUT WIRE TOGETHER, ONE HOLDS WIRE FIRMLY, CLOSE TO CUTTERS, IN ORDER TO MUFFLE SOUND AND KEEP LOOSE WIRE FROM SNAPPING BACK WHILE THE OTHER SCOUT CUTS.
IN CUTTING WIRE ALONE, A SCOUT GRASPS WIRE CLOSE TO A STAKE AND HIS HAND, THUS MUFFLING SOUND AND KEEPING LOOSE WIRE IN HIS GRASP TO PREVENT ITS SNAPPING BACK.

Figure 5-6. Cutting Wire Silently at Night.

Wrap a sandbag around the wire cutters and wire to deaden the sound.

Do not cut a complete gap in the wire; cut only the bottom wire(s). Leave the top wire(s) intact to lessen the chance of discovery by the enemy.

Crossing Trenches

Before approaching a trench, wait outside the trench for awhile and listen. Do not enter or cross a trench near its junction with a communication trench. Crawl silently up to the edge of the trench and look into it. Remove all loose dirt and rocks from the edge. If it is a narrow trench, spring up and jump across, sinking quietly to the ground on the other side and remaining there a moment to listen before proceeding. If the trench is wide, climb silently and slowly down into it and out the other side, using the revetment for support (see fig. 5-7). Do not enter enemy trenches unless it is absolutely necessary in order to accomplish the mission. Ordinarily, work is better accomplished from outside the trench. Sentries usually pay more attention to sounds in front of them; therefore, if it is necessary to enter a trench, cross it first at the place where enemy observation is restricted, then approach from the rear.

5009. LOCATING AND PLOTTING THE ENEMY AT NIGHT

For night work, a scout must understand the use of a lensatic compass. (Refer to para. 2002.) Using the lensatic compass, the scout can guide the platoon into position, locate adjoining elements of the command, keep direction when on patrol, determine the location of gaps in the enemy wire and the position of enemy out guards.

Locating Gaps in Enemy Wire

When searching for gaps in enemy wire, at least two lensatic compasses are needed: one to register the gap in the wire and the other for navigation. When a gap in enemy wire is located, lie outside the gap, keeping a distance of 10 meters from the barbed wire. Sight with the lensatic compass on a prominent point on the skyline in line with the gap. In selecting the prominent point in the skyline, pick one that appears on the map (i.e., hill mass, house, road junction). If the only prominent point available is one not identifiable on a map (i.e., a tree, destroyed vehicle, enemy position),

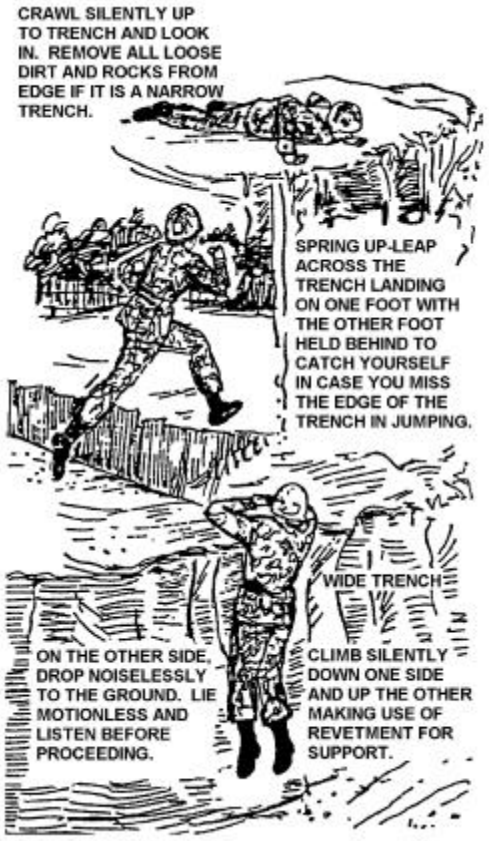

CRAWL SILENTLY UP TO TRENCH AND LOOK IN. REMOVE ALL LOOSE DIRT AND ROCKS FROM EDGE IF IT IS A NARROW TRENCH.
SPRING UP-LEAP ACROSS THE TRENCH LANDING ON ONE FOOT WITH THE OTHER FOOT HELD BEHIND TO CATCH YOURSELF IN CASE YOU MISS THE EDGE OF THE TRENCH IN JUMPING.
WIDE TRENCH
ON THE OTHER SIDE, DROP NOISELESSLY TO THE GROUND. LIE MOTIONLESS AND LISTEN BEFORE PROCEEDING.
CLIMB SILENTLY DOWN ONE SIDE AND UP THE OTHER MAKING USE OF REVETMENT FOR SUPPORT.

Figure 5-7. Crossing Trenches Silently at Night.

use it. The exact location of this point can be fixed the next day by visual reconnaissance of the area from an observation point. When the needle rests—

- Clamp it in place by lowering the eyepiece to the closed position.
- Rotate the movable bezel ring until the luminous line is directly over the north end of the needle. The azimuth of the gap from the prominent point is now registered.

The compass is carried back without further adjustment. The azimuth setting can be recorded later on a map (see fig. 5-8).

Locating Enemy Out Guards

At night, locate enemy guards by their sounds and failure to maintain light discipline. As sounds of the enemy are heard, and/or observations of the enemy made, shoot an azimuth with one compass. When the needle comes to rest, clamp the compass by lowering the eyepiece to the closed position.

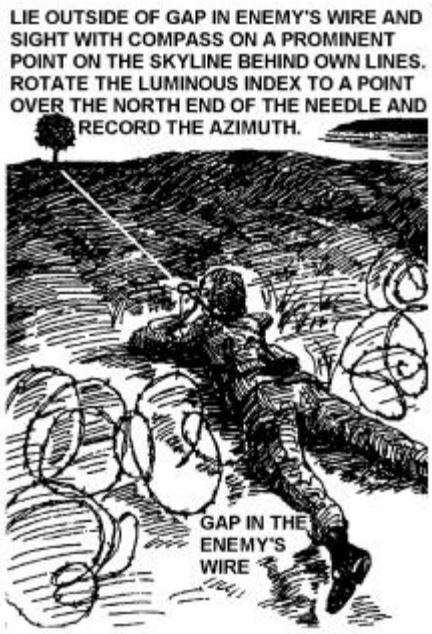

LIE OUTSIDE OF GAP IN ENEMY'S WIRE AND SIGHT WITH COMPASS ON A PROMINENT POINT ON THE SKYLINE BEHIND OWN LINES. ROTATE THE LUMINOUS INDEX TO A POINT OVER THE NORTH END OF THE NEEDLE AND RECORD THE AZIMUTH.
GAP IN THE ENEMY'S WIRE

Figure 5-8. Locating a Gap in Enemy Wire at Night.

Note the time and nature of each sound, the estimated distance, and which compass was used to fix the location. Plot this data on a map then wait until the debrief to turn in the notes and compasses. See figure 5-9.

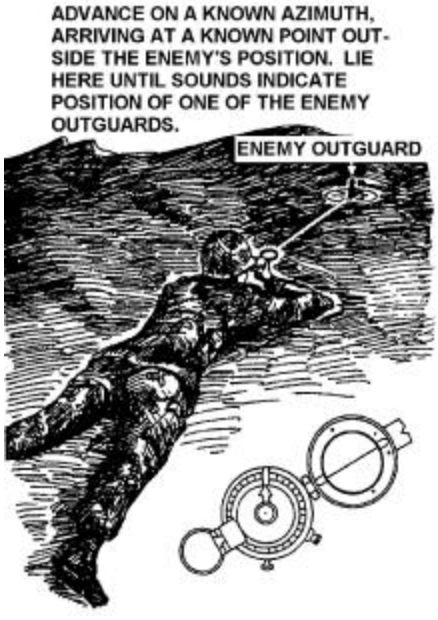
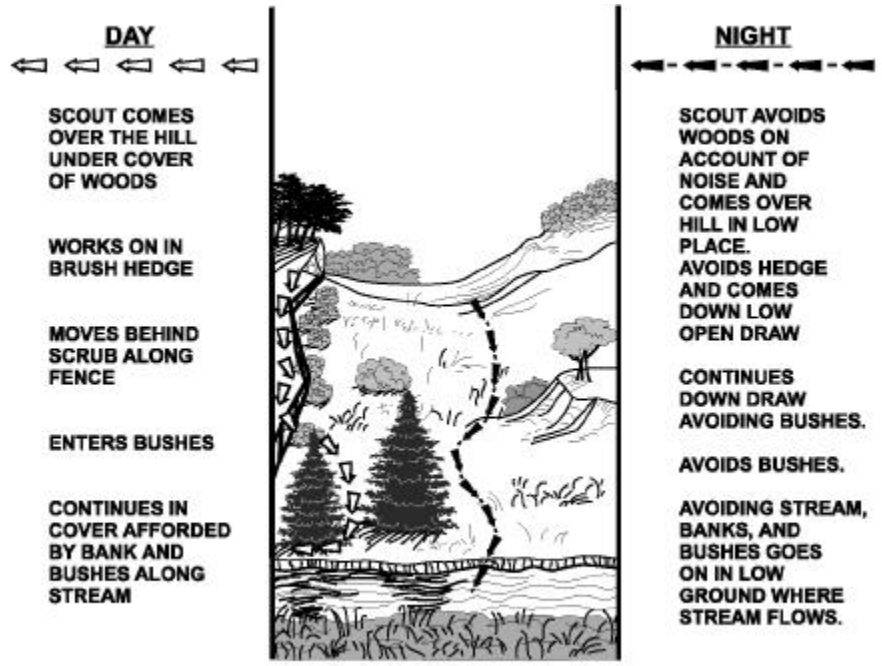

ADVANCE ON A KNOWN AZIMUTH, ARRIVING AT A KNOWN POINT OUTSIDE THE ENEMY'S POSITION. LIE HERE UNTIL SOUNDS INDICATE POSITION OF ONE OF THE ENEMY OUTGUARDS.
ENEMY OUTGUARD

Figure 5-9. Locating Enemy Outguards at Night.

50010. ROUTES OF MOVEMENT

Prior to beginning a night missions, a scout studies the ground in detail from an observation point, air photos, and a map during daylight. The route of advance should be below the skyline. Avoid becoming a silhouette (see fig. 5-10).

Unless the moon is bright, avoid, if possible, passing through woods, ditches, ravines, and brush, because noises of movement may lead to discovery. If the enemy is known to have night observation device capability, avoiding these kinds of terrain may not be possible. To avoid enemy ambushes, return by a different route from the advance and change routes on successive nights.


DAY
NIGHT
SCOUT COMES OVER THE HILL UNDER COVER OF WOODS
WORKS ON IN BRUSH HEDGE
MOVES BEHIND SCRUB ALONG FENCE
ENTERS BUSHES
CONTINUES IN COVER AFFORDED BY BANK AND BUSHES ALONG STREAM
SCOUT AVOIDS WOODS ON ACCOUNT OF NOISE AND COMES OVER HILL IN LOW PLACE.
AVOIDS HEDGE AND COMES DOWN LOW OPEN DRAW
CONTINUES DOWN DRAW AVOIDING BUSHES.
AVOIDS BUSHES.
AVOIDING STREAM, BANKS, AND BUSHES GOES ON IN LOW GROUND WHERE STREAM FLOWS.

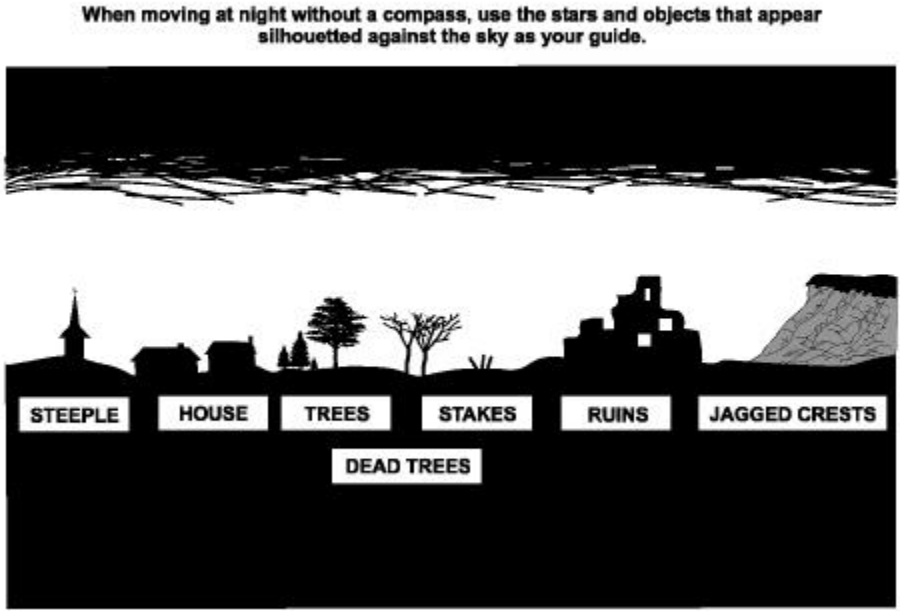


Figure 5-10. Difference Between Correct Routes by Day or Night.

CHAPTER 6. OBSERVING AND REPORTING

When sent out on a mission, a scout's duties are to observe and report. the first five chapters covered scout protection measures and movement in enemy territory. This chapter discusses performing the assigned mission and reporting the mission after its completion.

6001. OBSERVATION POSTS

Positions

The following guidelines apply to observation posts. See figure 6-1.

- When selecting observation posts, scouts should chose the least prominent position.
- Scouts may occupy one or more observation posts.
- An observation post should not be manned for more than 24 hours.
- A selected observation post should be observed for 10 to 15 minutes to ensure it is not occupied.
- Scouts move to the chosen observation post by a concealed route.
- If the post is located on a hill, crawl to a position where the skyline is broken.
- If a tree is used, the position should have a background so as not to be silhouetted against the sky while climbing or observing.
- When leaving the observation post, a different route from that of the approach should be used.
- If a radio is used, its antenna should be located to provide clear communication to the controlling commander but masked from enemy observation and direction-finding equipment. Upon departure, scouts should remove the antennae from the observation post so as not to give away the position.

Observing

Using all senses available, be particularly alert for movement, objects, sounds, and smells inappropriate to the surroundings. While observing, avoid all unnecessary movement. If observing from a building, keep back from doors and windows.

In daylight, look first at the ground nearest you. Begin observing close to your post and search a narrow strip 50 meters or less deep, going from right to left parallel to your front; then search from left to right a second and similar strip farther away but overlapping the first. Continue to observe until the entire field of view has been searched (see fig. 6-2 on page 6-2).

At night, use a night observation device. If one is not available, search the horizon with short, jerky movements, and short pauses. Look a little to one side of an object and then to the other. Lower the head close to the ground to view the object more clearly. Use low-powered field glasses to increase sight range.

OBSERVE DESIRED POSITION FROM A PLACE OF CONCEALMENT FOR SIGNS OF HOSTILE OCCUPATION. APPROACH SELECTED POSITION BY A CONCEALED ROUTE.

Figure 6-1. Method of Approaching an Observation Post.

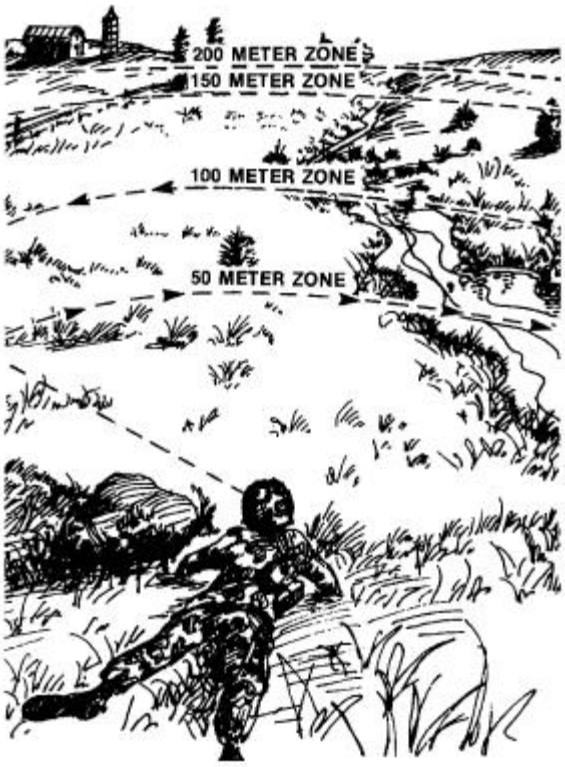


Figure 6-2. Method of Searching Ground.

6002. REPORTING

It is imperative that the scout accurately and completely report who, where, when, and what was observed to the proper authority upon mission completion. In most cases, a scout will not be equipped with a radio.

Verbal Reports

Verbal reports should be made when writing is impractical, when the information is not complicated or when the enemy is likely to intercept a messenger carrying a written message.

Written Messages

Written messages, preferred to verbal reports, are recorded in message book blanks issued for that purpose (see fig. 6-3) and delivered to a higher authority as soon as possible. The NATO spot report (SPOTREP) should be reviewed as the written message is a NATO format.

Z O P R	DTG (COMM. USE) 080850W Aug 88	FM: 1stSqd 1stPlt CoB 1/7
TO: C.O. B Co 1/7		
BT TOPSEC SECRET CONF UNCLAS		
1. REIN EN Co		
2. MOVING		
3. 347623 DIR SW		
4. UNK		
5. 0745 880808		
6. 4 82mm MORTARS and 4 HEAVY MACHINE GUNS		
7. MY LOC: 339590		
8. WILL REMAIN IN POS		
RELEASING OFFICER'S SIGNATURE R. D. Bassett Sgt USMC	TOR/TOD	PAGE ___ OF ___

Figure 6-3. Sample Field Message.

The message body is brief, accurate, and clear; facts and opinions are distinguished. If secondhand information is reported, its source is included. Reports include all information of value, first about the enemy, and then about the originator. Information about the enemy should cover—

- Size and/or strength.
- Actions or activity.
- Location and direction of movement.
- Unit identification. (The designation of the enemy unit may be derived from unit markings, uniforms worn or through prisoner interrogation.)
- Time of observation.
- Equipment and weapons.

Messages are printed in block letters. Individual items of information are numbered and separated into paragraphs. If doubt exists as to message receipt by the commander, a summary of its contents is included in the next message. Information about the originator or writer should cover—

- Location at the time of enemy observation (reference to an important terrain feature, by map coordinates, by the back azimuth from each of two definitely located points, or the back azimuth and distance from one known point).
- Intentions. (Remain in position? Continue on the mission? Take other action?)

The message is carefully reread and if possible read by another person to ensure understandability. If a messenger is used, the messenger must read and understand the message in order to answer any questions the commander might have.

Sketch

Information difficult to describe may be given accurately on a simple sketch. The sketch may give all the necessary information or it may be used to supplement a written message. A military sketch is generally one of two types: simple or panoramic. The simple sketch is easily made and read.

Figure 6-4 shows a simple sketch that has been included in the message itself. The sketch may be on a separate sheet of paper, but all of the necessary information must be contained in either the sketch, the message or both.

The panoramic sketch is a picture of the terrain's elevation in perspective, as seen from one point of observation. Although a panoramic sketch is not difficult to create, skill and training are necessary to enhance usefulness. Figure 6-5 on page 6-4 illustrates how to make a panoramic sketch.

Overlay

The same information sent back to higher headquarters on the sketch may be sent on an overlay, if the sender and the person to whom the message is to be sent have copies of the same map. Figure 6-6 on page 6-6 illustrates a simple overlay. The overlay is drawn on transparent paper as follows:

- Orient the map and place it on a hard, flat surface.
- Place the transparent paper over the part of the map of the object or information to be transmitted and hold the paper in this position.
- Orient the overlay to the map by tracing in the intersecting grid lines at two opposite corners of the overlay. Write the correct number designation on the overlay. The cross made by the intersection is called a *tick mark* and enables the receiver to locate the exact area on the map covered by the overlay.
- Sketch the object seen or the information to be transmitted on the tracing paper (the sheet on top of the map) in the exact location it would appear on the map (the sheet underneath the tracing paper).

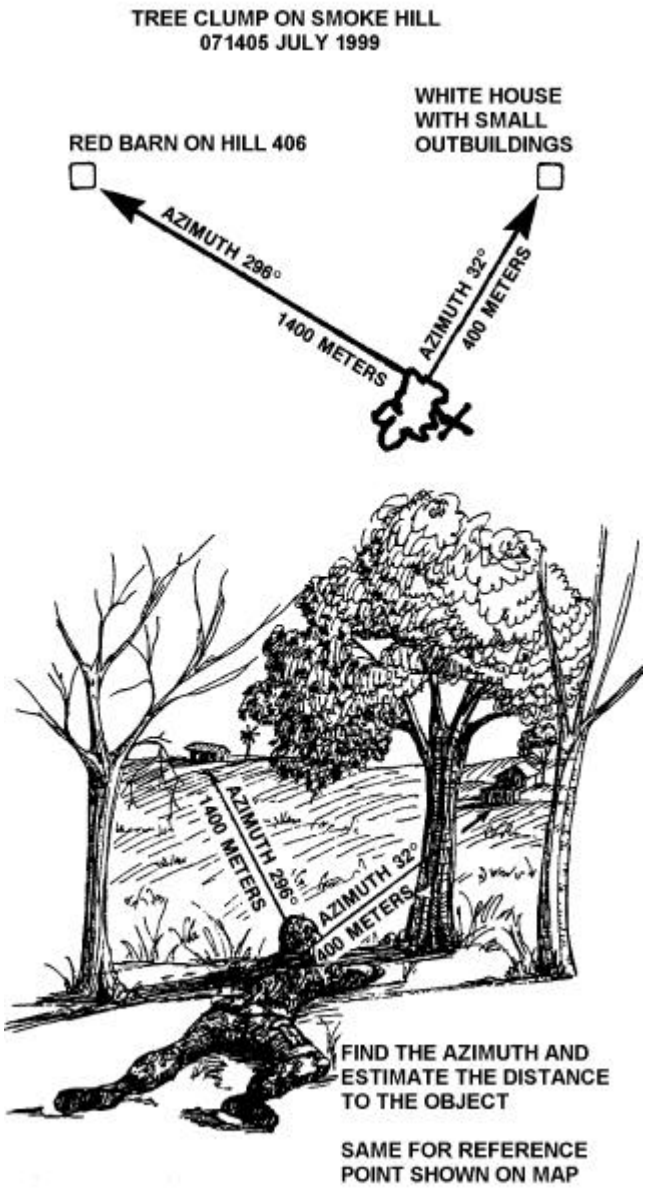


Figure 6-4. Making a Simple Sketch.

Explanatory notes are annotated in the overlay's margin, arrows point to the objectives.

- Indicate with an "X" and an appropriate explanation the position from which the observer saw the object or obtained information.
- Include title and scale of the map from which the overlay was made, date and hour the information was obtained, and signature of the observer on the overlay in the lower right-hand corner.

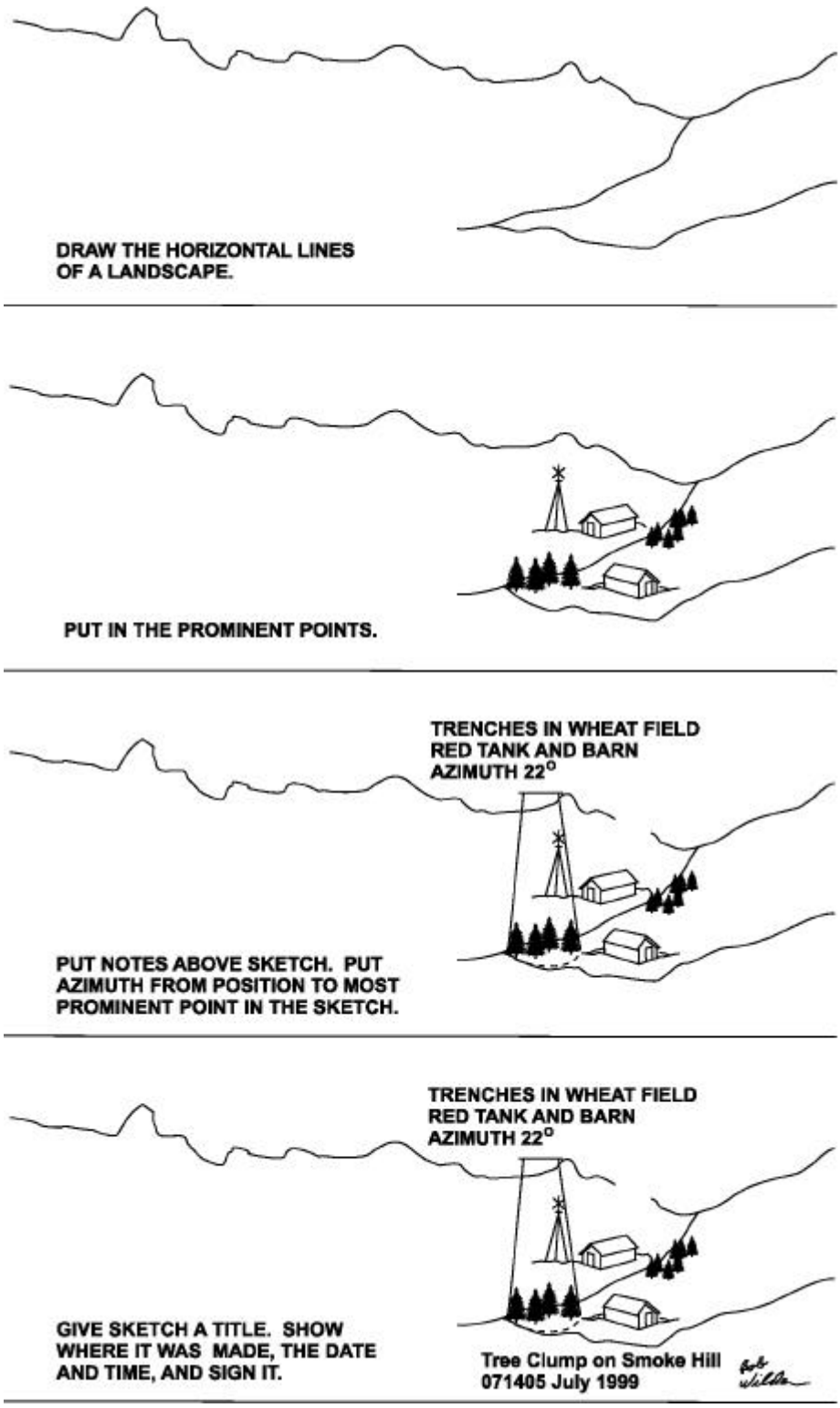

DRAW THE HORIZONTAL LINES OF A LANDSCAPE.
PUT IN THE PROMINENT POINTS.
TRENCHES IN WHEAT FIELD
RED TANK AND BARN
AZIMUTH 22°
PUT NOTES ABOVE SKETCH. PUT AZIMUTH FROM POSITION TO MOST PROMINENT POINT IN THE SKETCH.
TRENCHES IN WHEAT FIELD
RED TANK AND BARN
AZIMUTH 22°
GIVE SKETCH A TITLE. SHOW WHERE IT WAS MADE, THE DATE AND TIME, AND SIGN IT.
Tree Clump on Smoke Hill
071405 July 1999

Figure 6-5. Panoramic Sketch.

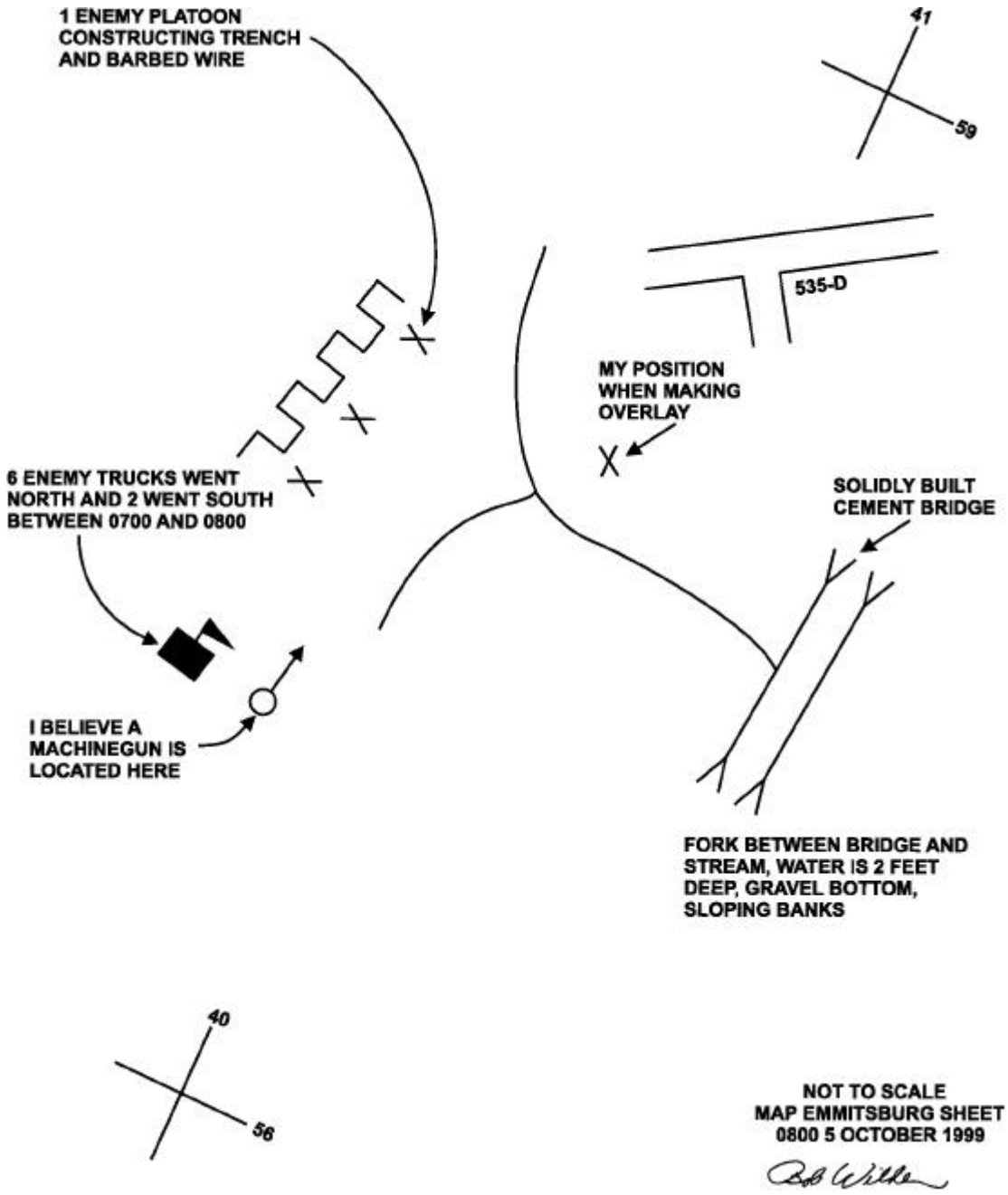


Figure 6-6. Simple Overlay.

CHAPTER 7. SCOUTING FIRE TEAMS

Upon completion of individual training, a Marine adapts this training to the functioning of the unit. The basic tactical unit for scouting is the fire team. Within the fire team, scouts normally work in pairs to furnish security and gather information. Information gathered by the individual scouts is passed to the fire team leader.

7001. POSITIONING

When a rifle platoon in the approach march is not preceded by adjacent units (left, right, front, and rear), it employs its own scouting elements. The scouting element for a platoon is usually one fire team; however, an entire squad may be used.

A fire team used as a scouting element is called a scouting fire team and is controlled by the platoon commander, assisted by the squad leader. A squad leader whose squad is providing the scouting fire teams normally marches near the platoon commander to assist in the control of the scouting fire teams.

A scouting fire team moves aggressively to cover the front of the advancing platoon and to locate the enemy's position(s). It generally moves in a wedge or skirmisher's formation. Normally, a scouting fire team is deployed on a frontage of 50 to 75 meters (10 to 17 meters between each individual scout). The entire squad may be employed to cover a wider frontage. The platoon commander coordinates the movement of the scouting fire team(s) so as to protect the main body of the platoon from enemy fire from points within 400 to 600 meters away, or in close terrain from points within the limits of enemy observation.

Scouting fire team(s) should have enough firepower to overcome resistance from small enemy advanced posts and patrols; the intent is to make enemy riflemen and machine gunners open fire and disclose their positions. Without scouts in advance, the platoon may move into areas where enemy fire may prevent further advance or maneuver and inflict heavy casualties (see fig. 7-1).

Scouting fire teams are covered by the platoon or, when the platoon is masked, the fire team leader ensures individual scouts are maneuvered and coordinated so that the fire team covers its own advance. The fire team leader constantly watches for signals from the platoon commander and remains in visual contact at all times.

The distance between the scouting fire team and the platoon is terrain-dependent. The scouting fire team should not be beyond visibility of the platoon. In open terrain, the platoon commander usually directs the scouting fire team to move by bounds along a succession of locations designated by the platoon commander as intermediate objectives.

Individual scouts should advance as stealthily as possible, while remaining consistent with their mission of reconnaissance to the front, taking advantage of cover without delaying the advance. An occasional glimpse of scouts constantly advancing over a wide front can make the enemy uneasy. It is this activity, and not the target the scouts offer, that may cause the enemy to open fire and disclose its location.

When fired upon, scouts must drop to cover and return fire only when necessary to complete the mission. If

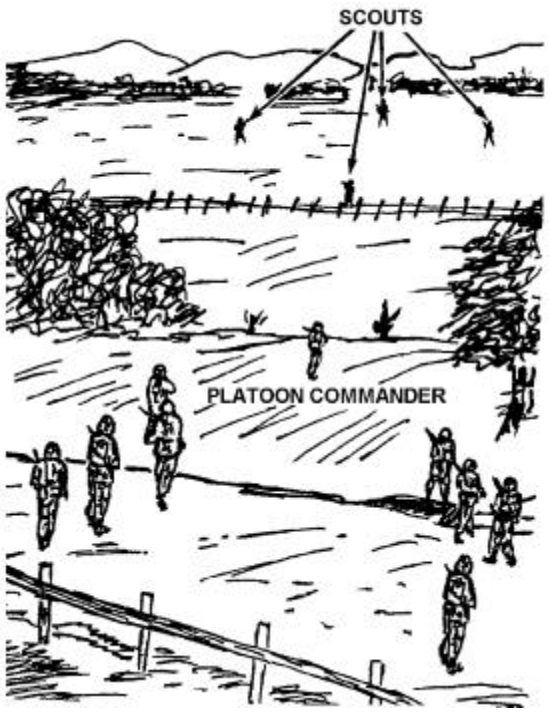


Figure 7-1. Position of Scouts Preceding an Attacking Platoon.

necessary, one scout reports back to the fire team leader who informs the platoon commander.

7002. LOCATING ENEMY POSITIONS

The key terrain of defensive positions are those points that afford extended observation over the ground where the attack must advance. The enemy will place machine guns and infantry to defend critical points.

Members of a scouting fire team preceding an attacking platoon identify the probable enemy infantry and machine gun positions (see fig. 7-2). They use concealment and cover to conduct their advance in order to discover the exact location of enemy positions.

7003. ACTION WITH AN ATTACKING PLATOON

The scouting fire team reconnoiters to the front of the advancing platoon. As soon as the scouting fire team leader indicates the area is secure, the platoon advances and the scouting fire team moves forward. Squads within the platoon advance by bounds; at least one squad is positioned to support the other(s) by fire. Successive positions along the line of advance are selected and designated by the platoon commander as intermediate objectives, and reconnoitered by the scouting fire team before occupation. By conducting proper reconnaissance, surprise by the enemy or movement in the wrong direction may be prevented.

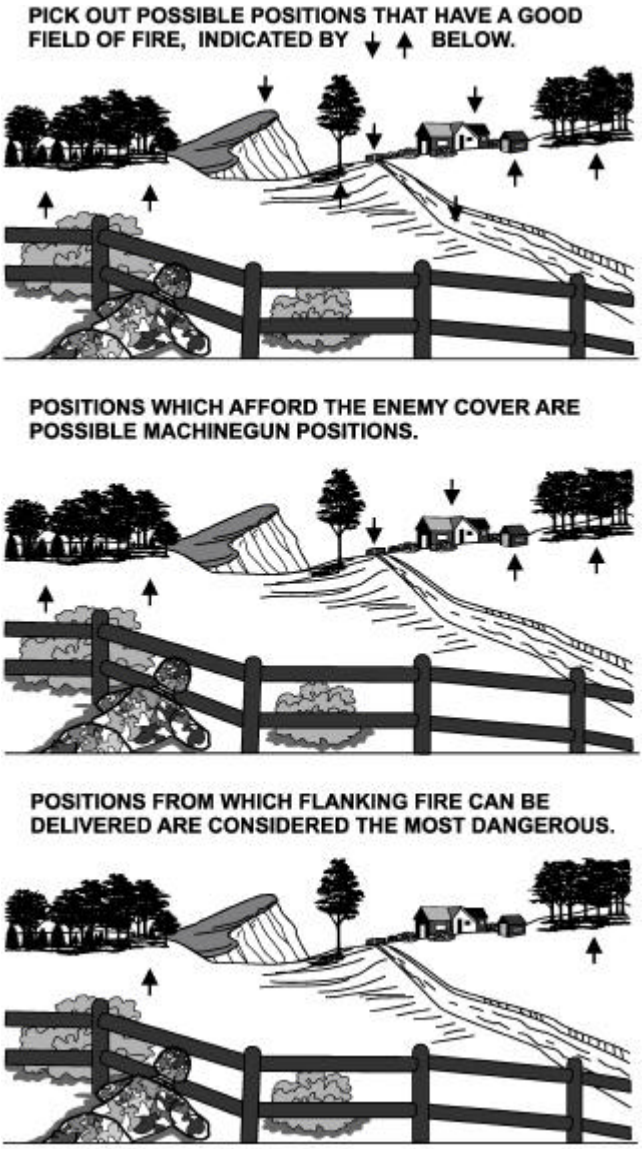

PICK OUT POSSIBLE POSITIONS THAT HAVE A GOOD FIELD OF FIRE, INDICATED BY ↓ ↑ BELOW.
POSITIONS WHICH AFFORD THE ENEMY COVER ARE POSSIBLE MACHINEGUN POSITIONS.
POSITIONS FROM WHICH FLANKING FIRE CAN BE DELIVERED ARE CONSIDERED THE MOST DANGEROUS.

Figure 7-2. Assessing Probable Enemy Machine Gun Positions.

Movement

The distance between the scouting fire team and the front of the main body of the platoon is dependent on the mission, enemy, terrain and weather, troops and support available, and time available (METT-T). In close terrain, such as dense woods, the scouting fire team's movements closely resemble those used for night operations. In approaching houses, woods, and villages, one scout of each pair covers the other while the latter reconnoiters (see fig. 7-3).

A scouting fire team moves forward aggressively to cover the front of the advancing platoon, usually adopting either skirmisher's or wedge formation in order to be prepared to go into action immediately and to cover a wide frontage of 50 to 75 meters.

As a scouting fire team advances in open terrain, it is supported when possible by elements of the platoon; in close terrain, by mutual support within each fire team. Mutual support within the fire team is accomplished by the fire team leader and the automatic rifleman forming a team that supports by fire the advance of the rifleman and assistant automatic rifleman until they reach a location designated by the fire team leader. The rifleman and assistant automatic rifleman then support by fire the movement of the team leader and automatic rifleman. These successive

points to which the sub elements of the fire team move are normally designated as fire team intermediate objectives by the fire team leader. The fire team leader sets as many fire team intermediate objectives as necessary to maintain mutual support within the team. This process is repeated until the team can be covered by other elements of the rifle platoon.

A scouting fire team takes advantage of available cover and concealment without delaying its advance. The orders of the platoon commander govern the distance at which it precedes the platoon. The terrain and the probable position of the enemy affect the scouting fire team's distance in front of the platoon. It may be as much as 400 to 600 meters in advance of the platoon. In open terrain, the platoon commander usually directs that the scouting fire team move by bounds to a succession of intermediate objectives. In close terrain or conditions of limited visibility, the scouting fire team is normally ordered to precede the platoon at the limit of visibility, maintaining visual contact with the platoon commander.

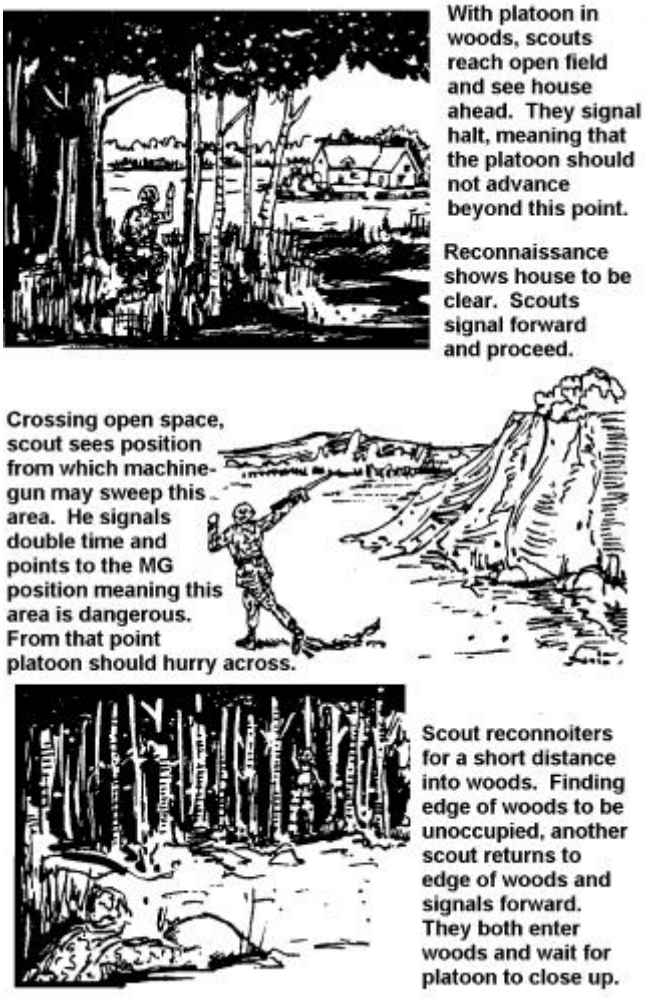

With platoon in woods, scouts reach open field and see house ahead. They signal halt, meaning that the platoon should not advance beyond this point.
Reconnaissance shows house to be clear. Scouts signal forward and proceed.
Crossing open space, scout sees position from which machine-gun may sweep this area. He signals double time and points to the MG position meaning this area is dangerous. From that point platoon should hurry across.
Scout reconnoiters for a short distance into woods. Finding edge of woods to be unoccupied, another scout returns to edge of woods and signals forward. They both enter woods and wait for platoon to close up.

Figure 7-3. Conduct of Scouts Preceding a Platoon.

Action in Woods

When a scouting fire team is directed to advance over open ground to the edge of a woodline, two members of the team, preferably the rifleman and assistant automatic rifleman, reconnoiter inside the woodline while the remainder of the fire team covers them. It is not recommended they separate until finished with their reconnaissance of the far side of the danger area. Both members staying together can cover the same area using a zigzag reconnaissance and they are better equipped to overcome any opposition.

In heavy underbrush and/or poor visibility, the rifleman and assistant automatic rifleman proceed into the woodline together for 50 to 60 meters. The two then separate, searching out either flank to the first high ground or limits of observation, probably 50 to 100 meters (see fig. 7-4 on page 7-4). After the initial search and out posting the limit of advance, the remaining scout signals the fire team forward.

In light underbrush and/or good visibility, the assistant automatic rifleman remains at the edge of the woodline while the rifleman searches the woodline. (see fig. 7-5 on page 7-5). The rifleman searches the woodline in a zigzag pattern, reports back to the assistant automatic rifleman, then moves to an outpost position at the limit of advance. In turn, the fire team leader signals the platoon commander that it is safe for the platoon to move forward.

The fire team leader then moves the remainder of the fire team into the woods, joining up with the forward scout manning the outpost. The scouting fire team occupies and holds a line 50 to 75 meters within the woods and observes toward the direction of movement until the platoon closes up. The scouting fire team leader awaits further word from the platoon commander before moving the team further into the woods.

When directed, the scouting fire team leader moves the team forward until they reach the far edge of the woods. The team is held at the edge of the woods and the fire team leader notifies the platoon commander of the situation. The platoon commander moves the platoon to a position where it can cover the scouting

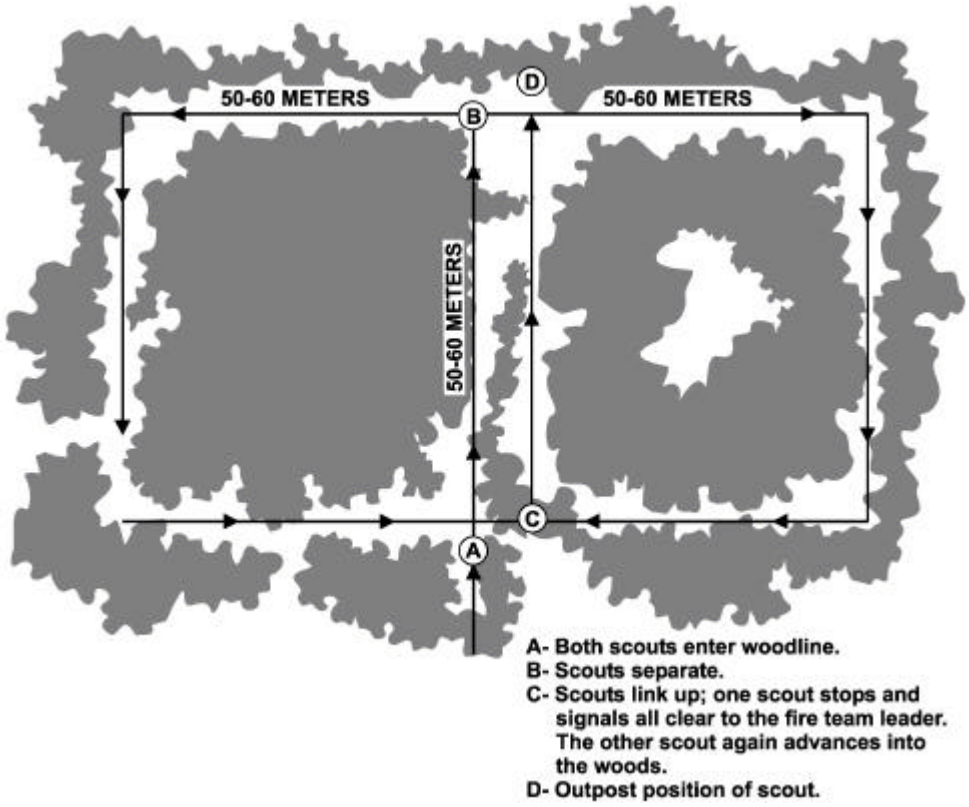

50-60 METERS
50-60 METERS
50-60 METERS
A
B
C
D
A- Both scouts enter woodline.
B- Scouts separate.
C- Scouts link up; one scout stops and signals all clear to the fire team leader. The other scout again advances into the woods.
D- Outpost position of scout.

Figure 7-4. Searching Edge of a Woodline (Dense Underbrush/Poor Visibility).

fire team as it exits the woods and directs the team leader to move out and continue the scouting mission.

A scouting fire team passing through woods ahead of its unit maintains a distance allowing visual and oral communications. If an obstacle is encountered, reconnaissance to its front and flanks must be carried out. When advancing along a road or path, scouts precede the platoon to provide necessary protection and to prevent surprise fire on the platoon. When crossing a road or path, they reconnoiter well to the flanks before signaling "all clear" to the platoon.

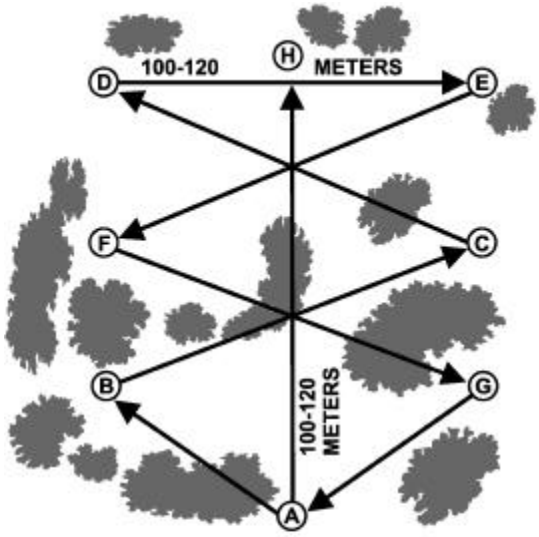
The scouting fire team will not exit the woods until the arrival of the platoon commander, who will then be given an opportunity to alter the disposition or direction of march. The point where the platoon exits the woods is considered a danger area where the platoon is vulnerable to enemy fire. The scouting fire team is sent ahead to reconnoiter the danger area, as well as the next area to be occupied by the platoon. They signal back whether conditions require a halt, an advance or a quick rush across the open area. The scouting fire team leader must be continually on the lookout for signals from the rear.

Action Under Fire

When a scouting fire team is fired upon, they immediately take cover, locate targets, and return fire. The scouting fire team leader then determines—

- Location of enemy (range and reference points).
- Extent of position (location of flanks).
- Types of positions (obstacles, bunkders, fighting holes, etc.).
- Number of enemy.
- Enemy weapons (machine guns, mortars, tanks, etc.).

The platoon commander assesses the situation as quickly as possible based on the limited information obtained. Usually the platoon commander brings up the remaining squads, sets up a base of fire, and assaults the enemy position. Should the enemy position prove too strong for the platoon, the platoon remains engaged with the enemy as a base of fire until the remainder of the company is committed to clear the enemy resistance.



A- Both scouts enter woods. Assistant automatic rifleman remains here and covers forward movement of rifleman.

B through G - Rifleman moves to these positions, stopping and observing before moving to next position.

G to A - Rifleman reports results of his search to the assistant automatic rifleman.

A to H - Rifleman moves to out-post position.

Figure 7-5. Searching Edge of a Woodline (Light Underbrush/Good Visibility).

7004. ACTION WITH AN ENVELOPING UNIT

When a platoon is given the mission to envelop an enemy position, a scouting fire team is employed for protection and reconnaissance in the same way as when the platoon is advancing in the approach march.

PART 2. INFANTRY PATROLLING

CHAPTER 8. FUNDAMENTALS OF INFANTRY PATROLLING

This chapter begins Part 2 and provides basic information about infantry patrols; specifically, their purpose, types, and missions. Infantry patrol training is also addressed and keys to successful patrolling are presented. Subsequent chapters of this part cover patrol organization, preparation, movement, and reconnaissance actions.

8001. DEFINITIONS

A patrol is a detachment of ground, sea or air forces sent out for the purpose of gathering information or carrying out a destructive, harassing, mopping-up or security mission (Joint Publication [JP] 1-02). The mission to conduct a patrol may be given to a fire team, squad, platoon or company.

8002. RELATION OF PATROLLING TO SCOUTING

Each patrol member must be knowledgeable in the principles of scouting and maintain membership of a larger team. To develop the teamwork skills required among the members of a patrol, additional training beyond the basic principles is necessary to become a well-trained scout. A patrol member must respond quickly to the decisions and orders of the patrol leader. There must be complete confidence among all members of the patrol and the confidence that they, as a team, will be successful in their mission.

8003. PURPOSE

A commander must have current information about the enemy and the terrain in order to employ the unit effectively. Patrols are an important means of gaining this information and are used to destroy enemy installations, capture enemy personnel, perform security missions or prevent the enemy from gaining information. Modern warfare places a high premium on effective patrolling because units have larger areas of operations and can be threatened from all directions. As distances between units increase, more patrolling becomes necessary to prevent infiltration by guerrillas or small enemy units, as well as to maintain contact with friendly adjacent units. Active patrolling by numerous small groups is needed to locate the enemy and gather information on the enemy's disposition, strength, morale, and weapons, as well as gather and confirm information about the terrain.

8004. TYPES OF PATROLS

Classification as to Mission

Reconnaissance Patrol

Reconnaissance patrols gather information about the enemy, terrain or resources. Relying on stealth rather than combat strength, they gather this information and fight only when necessary to complete the mission or to defend themselves. The distance covered by reconnaissance patrols varies based on the terrain and mission. The squad is ideally suited for reconnaissance patrol missions because of its relative small size and its experience of working together.

Combat Patrol

A combat patrol is a fighting patrol assigned missions that require engagement with the enemy in combat. Larger and more heavily armed than reconnaissance patrols, combat patrols have a mission to capture enemy documents, provide security, and capture or destroy enemy equipment and installations. Such action is ordinarily followed by a return to friendly

positions. Regardless of the mission, the patrol reports any information concerning the enemy and terrain acquired during the accomplishment of the assigned mission. There are four types of combat patrols: raid, contact, ambush, and security (normally conducted by a Marine rifle platoon). A rifle platoon reinforced with crew-served weapons is normally considered the minimum size for contact, economy of force or ambush patrols. In some situations, such as the capture of a small enemy outpost, a rifle platoon could conduct a raid. However, a raid is a complex mission and, due to the organization of a raid force (command, reconnaissance, assault, support, security, and reserve elements), a rifle company is normally the smallest force assigned to a raid.

Classification as to Means of Movement

Foot Patrols

Movement by foot is the most common means; however, there are inherent disadvantages. Foot patrols travel slowly and carry limited quantity and types of equipment and supplies. Range and area coverage is relatively restricted. Foot patrols also have apparent advantages in that they have fewer restrictions as to terrain that can be covered; are more difficult for the enemy to detect; provide thorough coverage within limits of range; and are generally not inhibited by weather.

Motorized Patrols

Where terrain and road networks permit, a motorized patrol overcomes the inherent disadvantages of the foot patrol. Mechanized forces require patrolling units that can keep pace with them. However, motorized patrols are restricted to certain types of terrain, and tend to bypass areas that may be advantageous to and occupied by enemy infantry.

Waterborne Patrols

Waterborne patrols move over seas, lakes, rivers and streams, canals, and other inland waterways. The water is either used as a medium of entry to an objective area or is the actual patrol route. Waterborne patrols are limited by the location of water routes in the terrain and tend to bypass areas that may be advantageous to and occupied by the enemy.

Helicopterborne Patrols

Where terrain is extremely difficult or the enemy situation precludes the use of vehicle or motorized patrols, helicopterborne patrols are a method or means to conduct a patrol.

8005. TRAINING

Training is essential to successful patrolling. Premature and unordered actions by members of the patrol destroy coordination and control. Leaders are trained to issue their orders calmly to inspire confidence and discipline, and to avoid misunderstanding. Patrol members must work together and fight as a team. Training should develop the following skills:

- Expertise in handling individual and special weapons, and familiarity with enemy weapons that may be captured.
- Recognize camouflaged personnel, equipment, and defensive positions; ability to pick up fleeting targets fire the rifle from any firing position.
- Understand fire discipline and, after weapon firing, immediately change position (see fig. 8-1).
- Quick and accurate observation skills, and the ability to recall and transmit clearly and briefly, both orally and in writing.

Figure 8-1. Changing Position After Firing.

- Recognize and quickly respond to improvised signals, visually or by sound.
- Ability to swim with weapon and equipment.
- Use issued or improvised camouflage suits and garnish helmet in order to blend with the surroundings. Smudge face, hands, and any bright surfaces of weapons and equipment with some substance, such as mud or charcoal, to prevent the reflection of light.
- Silence self, equipment, and weapon.
- Use antimalarial and water purification tablets.
- Acclimation to temperature extremes.
- Develop a sense of direction and learn how to follow a course by compass, stars, sun, flow of streams, prominent terrain features, and by observing other natural phenomenon. Learn to determine the distance traveled from a known point and to keep a record of azimuths and the distance traveled on each azimuth (dead reckoning).
- Call for and adjust indirect fire assets.
- Familiarization with all communications assets and the use of field expedient antennae.

8006. KEYS TO SUCCESSFUL PATROLLING

Regardless of the category or means of conducting a patrol, the keys to successful patrolling are—

- Detailed planning. Every portion of the patrol must be planned, all possible contingencies considered.
- Productive, realistic rehearsals. Each phase of the patrol is rehearsed, beginning with actions in the objective area. Similar terrain and environmental conditions are used when conducting rehearsals.
- Thorough reconnaissance. Ideally, the patrol leader will physically conduct a reconnaissance of the route and objective. Photographs and/or maps will be used to supplement the reconnaissance.
- Positive control. The patrol leader must maintain positive control, this includes supervision during patrol preparations.
- All-around security. Security must be maintained at all times, particularly near the end of the patrol where there is a natural tendency to relax.

CHAPTER 9. PATROL ORGANIZATION

Organizing a patrol is a two-step process: the general organization of the entire patrol and the task organization of various patrol elements. Normally, the nature of patrolling does not permit long preparation periods and rehearsals to specifically build a unit for each mission. Accordingly, the patrol leader must combine unit integrity considerations with proven concepts of patrol organization.

9001. GENERAL ORGANIZATION

The patrol leader establishes a patrol headquarters and elements to accomplish the mission.

The headquarters is composed of the patrol leader and the personnel who provide support for the entire patrol, such as a forward observer, corpsman, and radio operator.

The major subdivisions of reconnaissance and combat patrols are elements. The existing infantry structure (squads and fire teams) is reinforced as required. For example, a reinforced platoon tasked to conduct a combat patrol that will raid an enemy outpost could be organized as follows:

- Platoon headquarters (command element):
  - Patrol leader (platoon leader).
  - Assistant patrol leader (platoon sergeant).
  - Navigator.
  - Radio operator (company tactical net).
  - Radio operator (patrol tactical net).
  - Corpsman.
- The first squad (security element) provides security en route to the objective area (the point, flank security, and rear security) and at the objective area (the flanks and the objective rally point).
- The second squad (support element) supports by fire for the attack, covering fire for the withdrawal, and supporting fires to cover the crossing of danger areas.
- The third squad (assault element) provides the assault force to attack and seize the objective; searchers to clear the objective; pacers, compass man, navigator, and the assistant patrol leader en route and back from the objective area.

Any attachments a patrol may have (i.e., demolition team, scout snipers, and machine gun squad) will be added to the element that supports its function. For example, the demolition personnel should go with the unit conducting the attack, and scout snipers and machine gunners should stay with the support squad.

9002. TASK ORGANIZATION

The preceding paragraphs described the elements necessary for a patrol to accomplish its mission. These elements reflect the internal functions or tasks required for the patrol to succeed. Depending on the METT-T, there are various methods of grouping these elements together. Task-organization is the further subdivision of patrol elements into teams that are required to perform essential tasks. In creating teams, unit integrity of infantry units should be maintained.

The patrol is organized so each individual, team, and element is assigned a specific task, but capable and prepared to perform other tasks. This may not be possible for certain specialist tasks requiring a trained technician.

CHAPTER 10. PATROL PREPARATION

For a patrol to succeed, all members must be well trained, briefed, and rehearsed. The patrol leader must have a complete understanding of the mission and a thorough understanding of the enemy and friendly situations. The patrol leader should make a complete reconnaissance of the terrain to be covered (either visual or map), and must issue an order to the patrol, supervise preparations, and conduct rehearsals.

10001. MISSION

The mission assigned to a patrol must be clear and oriented toward one objective with a specific task and purpose. More than one primary objective or indefinite missions invites confusion, casualties, and failure.

10002. FACTORS INFLUENCING PATROL SIZE

The circumstances under which patrolling by infantry units is conducted make it necessary for combat patrols to be able to fight offensively, security patrols to defend themselves, and reconnaissance patrols to move quickly and only fight if necessary to break contact or defend themselves. The size of a patrol depends on METT-T.

Generally, a patrol should contain the least number of members needed to accomplish the mission. Combat missions ordinarily require larger patrols than reconnaissance missions.

10003. COMMANDER'S DUTIES

Determining Patrol Requirements

The need for conducting patrols derives from the commander's stated mission (issued by higher level commander) and other specified and implied tasks (secondary or supporting efforts necessary to accomplish the stated mission). This requires analyzing the unit's mission and determining the necessary reconnaissance and/or combat tasks that must be performed. By considering the mission, along with time available, the commander develops the overall concept of operations to include the patrol plan and the specific tasks for each patrol.

Assigning Units

When assigning patrol missions, maintaining the integrity of the existing unit while considering the skills and experience of the unit and its leader are critical factors to the infantry commander. To provide operational depth and equitable apportionment of hazardous assignments, the commander ensures that each of the subordinate leaders and units develops the skills and experience necessary to conduct successful patrols. Assignment of patrol units must consider the commander's concept of operations as a whole and the plans for subsequent employment of assigned forces after completion of the assigned patrolling mission.

Providing Adequate Time

The commander must allow the patrol sufficient preparation time by completing the mission analysis, estimate, and preparation of orders. The commander should use warning orders to alert subordinates to possible requirements and afford them the opportunity for concurrent planning.

Providing the Patrol Leader Information

The following information should be provided:

- A simple, straightforward explanation of the mission, particularly for night patrols.
- General routes (defined by checkpoints) or exact routes (defined by avenues of approach or other terrain features) to follow.
- Enemy composition, disposition, and strength.
- Location and activities of friendly troops.
- Outposts or other security elements through which the patrol is to pass.
- Terrain conditions.
- Missions and routes of other patrols.

- Time patrol is to depart and return.
- Method of reporting information while on patrol (radio, messenger), place where messengers are to be sent, and place where the patrol leader is to report upon completion of the patrol.
- The challenge and password to be used for exiting and reentering friendly lines.
- Special instructions such as locations to be avoided and essential elements of information higher headquarters is seeking.
- Report barrier/obstacle plan of friendly units if known; support available from friendly unit (e.g., medical evacuation [MEDEVAC], react force).
- Fire support available.

Providing Special Skills and Equipment

There will be situations when the unit assigned to conduct a patrol does not have the necessary technical skills or equipment organic to it to successfully accomplish the patrol mission. In these cases, additions (attachments) are made to the unit, such as—

- Machine gun and/or shoulder-launched, multipurpose assault weapon (SMAW) team and/or squad.
- Forward observers (mortar/artillery).
- Radio operator(s).
- Combat engineers.
- Tracked vehicle crewman to assess the ability to traverse the terrain.
- Corpsman.
- Other personnel (snipers, translators) as required.

Providing Miscellaneous Support

The commander must ensure that the patrol leader is provided with the food, water, ammunition, radios and batteries, maps, special clothing, and any other items required by the unit (includin attachments) needed for the mission. Post-patrol support such as debriefings by intelligence personnel must also be planned.

Reviewing the Patrol Leader's Plan and Preparations

Once the patrol leader receives the mission, conducts visual and/or map reconnaissance, and develops the plan, the commander confirms the patrol leader's understanding of the mission and plan for accomplishing it. This discussion between the patrol leader and commander ensures that the patrol leader understands the commander's intent and is properly prepared to provide the patrol leader an opportunity to ask for clarification or additional support, if required.

Debriefing the Patrol

Upon return of the patrol, the commander receives the patrol report at a debriefing attended by the patrol leader and all patrol members. The debriefing should be conducted as soon as possible following the patrol's return, while information is still fresh in the minds of the patrol members. A patrol report, based on the information collected during the debrief, is generated and forwarded to the next higher com-mander.

10004. PATROL LEADER DUTIES

The patrol leader organizes and prepares the patrol by using the six troop-leading steps to make the best use of resources available. These steps are to—

1. Begin planning.
2. Arrange for reconnaissance and coordination.
3. Make reconnaissance.
4. Complete the plan.
5. Issue the order.
6. Supervise.

Begin Planning

The patrol leader begins by evaluating all factors affecting the mission. He looks for possible courses of action that lead to a decision, and then transforms this decision into an order. The first step includes making an initial assessment and decision on using available time, issuing a warning order and initial preparatory tasks, and initiating his estimate.

The initial planning effort assesses the time, assistance, and information available, and plans the proper use of each. Time allowances include reconnaissance; completion of the estimate and order; troop preparation; and such briefings, rehearsals, and inspections as required before beginning the patrol.

The patrol leader reviews the mission and the attachments and/or support available and decides what preparatory efforts must begin immediately. Proper use of subordinates to manage these initial tasks during this period reduces preparation time and frees

the patrol leader for proper planning and reconnaissance. A warning order is issued using a modified five-paragraph order format (situation, mission, execution, administration and logistics, and command and signal [SMEAC]) as a checklist. (Refer to app. A for specific information that a patrol warning order should contain within each checklist item.

Once the initial preparations are set in motion, the patrol leader begins estimating by analyzing the mission; considering the friendly, enemy, and operating environments; considering each course of action available against what the enemy might do; comparing the courses of action in terms of mission accomplishment, capabilities, and probable casualties; and choosing one that becomes the basis for concept and order. While the patrol leader should use and organize notes, estimates must be done quickly and accurately, particularly for immediate situations. To organize thinking, the patrol leader uses METT-T, which consists of:

- Mission—the mission assigned to the patrol and how it relates to the mission of the commander who is sending the patrol.
- Enemy—what is known or suspected of enemy presence and capabilities, habits and characteristics, and fighting techniques.
- Terrain and weather—including ground, vegetation, drainage, weather, and visibility.
- Troops and support available—friendly situation and support available.
- Time available—the constraints and impact of time on preparation and mission accomplishment.

The estimate begins with mission analysis, which is the most important part of the entire planning process. Here, the patrol leader considers the specified tasks of the mission assigned and identifies other significant actions (specified and implied tasks) that must be undertaken to accomplish the stated mission. These tasks are arranged in sequence of accomplishment. The tasks and sequence create the framework for developing courses of action for the patrol concept of operations.

Arrange for Reconnaissance and Coordination

The patrol leader arranges a personal reconnaissance to observe as far forward as possible and also coordinates with the appropriate commanders for the patrol's "passage of lines" (see paragraph 11001 for complete definition) and supporting fires. The patrol leader also coordinates with other patrol leaders who may be operating in the same or adjacent areas and requests that the commander assigning him the patrol mission coordinate the patrol action with adjacent commanders, local security, and night defensive fires, as appropriate. The patrol leader may delegate any or all of these arrangements to the assistant patrol leader if the patrol leader requires the time for planning.

Make Reconnaissance and Complete the Estimate

The patrol leader uses personal reconnaissance to answer questions that arise from the map reconnaissance and METT-T evaluation. Specific points include passage points, lanes through obstacles, locations of friendly listening posts and observation posts, possible approach and return routes, enemy positions (if any), and intermediate observation points on the way to the objective.

In selecting approach and return routes, the patrol leader chooses routes that best use concealment and avoid opposition and obstacles. To lessen the chances of ambush by the enemy, the return trip is planned along a different route. In addition to personal reconnaissance and review of the map and aerial photographs, the advice of other patrol leaders who already are familiar with the terrain and the objective area should be considered.

After compiling information about the situation and possible time constraint, the patrol leader completes an estimate. The first step is developing courses of action, each of which will provide for movement to the objective area, mission accomplishment, and the return, based on the tasks and their sequencing identified in mission analysis. While the eventual concept of operations is presented in order of occurrence, the patrol leader must develop the courses of action by either backward or forward planning. In situations where the objective is well defined and there is sufficient information to plan the action for mission accomplishment (reconnaissance or combat), the patrol leader begins the scheme for accomplishing the mission at the objective and then, planning backwards, considers the options for getting there and back.

The following sections on movement to and return from the objective area, reconnaissance missions, and combat missions discuss methods and options available to the patrol leader in developing the courses of

action. The principal variables between courses of action will be who, where, and how in the following:

- Patrol task organization.
- Routes to the objective area.
- Observation point(s) (reconnaissance patrol), ambush site, form of maneuver, type of ambush (combat patrol), fire support plan.
- Return routes.

The patrol leader then mentally considers the progress of each course of action (a map or simple sketch is a useful aid) against expected and unexpected enemy action. By comparing the options against each other and prospective enemy opposition, the patrol leader chooses the course of action that has the best chance of success. Includes in this mental preview process is the time to determine the patrol plan for unexpected contingencies (enemy attack/counterattack, casualty handling). These contingency actions, together with the selected course of action, become the patrol concept of operations.

Once the patrol leader determines the scheme of maneuver, the fire support required to accomplish the mission is addressed including the fire power organic to the patrol and what additional indirect fire support will have to be provided by other units. When planning for indirect fire support, the patrol leader considers the following questions:

- Will artillery, mortar, or close air support be required at the objective area (combat patrols)?
- What artillery and mortar targets exist along the routes to and from the objective area that can be employed by the patrol if it encounters the enemy during movement (reconnaissance patrols and combat patrols)?
- What additional fire support will be required to cover the patrol's movement from the objective area back to the friendly area once the enemy is aware of the patrol's actions at the objective area (combat patrols)?

The effect that casualties have upon the patrol depends upon many factors. Generally, more casualties can be expected in a combat patrol than in a reconnaissance patrol. A patrol may continue on to the objective carrying its casualties, send them back with a detail of Marines, abort the mission and return the entire patrol with the casualties, or call their parent unit for assistance.

Some factors that determine what action the patrol leader takes are: patrol's mission; unit's standing operating procedure for handling wounded; number of casualties and nature of their injuries; availability of aid, helicopters or other means of casualty evacuation. Helicopter evacuation should only be used for the most serious casualties. For infantry units conducting patrols in proximity to the enemy, helicopter evacuation of casualties may compromise the patrol's mission and force the patrol to return to friendly positions before the mission is completed.

The patrol leader determines the requirement for nuclear, biological, and chemical (NBC) defense equipment. Gas masks should always be carried due to the availability of riot control agents (RCAs) to the enemy. If chemical or biological agents have been employed in the area that the patrol must pass through, protective garments will have to be worn by patrol members for part of or the entire patrol. Wearing extra clothing and carrying extra equipment affects the speed of the patrol's movement. A contingency plan for post patrol decontamination must be developed.

Complete the Plan

At this point, the patrol leader has completed the basic thinking necessary for accomplishing the assigned mission. The patrol leader prepares the patrol order to spell out the details, assign tasks to subordinates, and explain the entire endeavor for ease of understanding by the other members of the patrol.

Prepare the Order

The patrol leader's order contains more detailed information than discussed in the warning order. Orders follow the prescribed five-paragraph order format but contain greater detail. The patrol order is a modified 5-paragraph order; the major modifications are to paragraphs 3a and 3c. The format for the order is contained in appendix B.

Issue the Order

The patrol leader asks for a status report on the initial preparatory tasks assigned to subordinate leaders and specialists when the warning order was issued. When the patrol leader has completed planning and initial preparations have progressed to the point where the patrol order may be issued, the members of the patrol are assembled. Roll call is taken to ensure all patrol members are present, then the prepared order is issued.

This will be the only opportunity for the patrol leader to issue detailed instructions. The mission, in particular, must be unmistakably clear so that once the patrol is committed, all subordinate leaders can act with unity of purpose.

Whenever possible, the patrol leader should have a Marine, such as the navigator, build a terrain model using dirt, sand, twigs, etc., explaining the concept of operations for movement to the objective area, actions at the objective area, and the return. Terrain models provide patrol members with a clear and simple layout of the area of operations and key terrain.

Supervise

Inspections and rehearsals, vital to proper preparation, are conducted even though the patrol leader and patrol members are well experienced in patrolling. Inspections determine the patrol's state of physical and mental readiness.

The patrol leader inspects before rehearsals to ensure completeness and correctness of uniform and equipment. The following areas are checked:

- Camouflage.
- Identification tags, Geneva Convention cards.
- Prescribed equipment, weapons, and ammunition are available and serviceable.
- Tape and other items are used to "silence" equipment (prevent noise produced during movement).
- Items that could provide information to the enemy (e.g., letters and papers) remain behind.
- Unnecessary equipment and excess weight remain behind.

The patrol leader questions each patrol member to ensure the following is known:

- The mission, planned routes (primary and alternate), and the fire support plan of the patrol.
- The individual's role: what to do and when to do it.
- What others are to do and how their actions impact.
- Challenges and passwords, codes, reporting times, radio call signs, frequencies, and any other pertinent details.

There is usually a period of time between final rehearsal and departure. The patrol leader reinspects just before departure to ensure all equipment is still in working order and the unit is ready to embark on the mission.

Rehearsals ensure the operational proficiency of the patrol. Plans are checked and needed changes are made. The patrol leader verifies the suitability of equipment. It is through rehearsals that patrol members become thoroughly familiar with the actions to take during the patrol.

If the patrol will operate at night, both day and night rehearsals are conducted. Terrain similar to that over which the patrol will operate is used. All actions are rehearsed. If time is limited, the most critical phases are rehearsed. Action at the objective is the most critical phase of the patrol and is always rehearsed.

An effective method is to talk the patrol through each phase, describing the actions and having each member perform individual duties. When satisfied, the patrol leader walks the patrol through all phases of the patrol using only the signals and commands to be used during the actual conduct of the patrol. Rehearsals continue until the patrol is thoroughly familiar with the plan. The rehearsal is also used to test the soundness of the patrol order and patrol organization.

After the rehearsal, the patrol leader makes final adjustments to the plan and patrol organization based on what was learned during the rehearsal and from other sources, such as the S-2 and adjacent patrols. When this is completed, the patrol leader issues final instructions to subordinate leaders noting any changes made in the patrol organization or plan. While the subordinate leaders are briefing the remainder of the patrol members, the patrol leader reports to the commander stating that the patrol is ready to begin the mission. The patrol leader also coordinates the location and time that the patrol can test fire all weapons prior to departure.

CHAPTER 11. MOVEMENT TO AND RETURN FROM THE OBJECTIVE AREA

This chapter provides guidance to patrol leaders for movement to and return from the objective area. Action in the objective area depends on whether the patrol is assigned a reconnaissance mission, combat mission or security mission. Chapters 12 and 13 provide detailed guidance on these types of missions.

11001. PASSAGE OF LINES

A passage of lines is an operation in which a force moves forward or rearward through another force's combat positions with the intention of moving into or out of contact with the enemy. (JP 1-02)

During the initial preparation for the patrol, the patrol leader selects a patrol assembly area and reconnoiters the area of passage designated by the commander. In coordination with the unit commander responsible for the area of passage, the patrol leader identifies gaps or lanes in minefields and wire obstacles and locates local security elements through which the patrol will pass. The patrol leader also checks the route from the patrol assembly area to the passage point or contact point where the patrol will depart friendly lines. If possible, both the route to the passage point and the route through the frontlines should be concealed from the enemy's view.

The patrol leader also reconnoiters the area for return passage of lines and coordinates with the unit commander responsible for the area of passage for passage points and lanes as necessary. The patrol leader observes these points from the direction that the patrol will use upon return to friendly lines, if possible, to aid in recognition upon return. The patrol leader provides the forward unit with information about the size of the patrol, general route, and expected time of return. The manner of challenge and recognition of the returning patrol should be coordinated in detail.

Upon return to friendly forward local security squads and/or frontlines, the patrol leader leaves the patrol in a covered position and moves forward with a radio operator and at least one Marine for security to make contact with the friendly unit in the manner agreed. After contact is made and recognized, the patrol leader rejoins the patrol and takes them to the passage point, personally checking in each member.

11002. ORGANIZATION FOR MOVEMENT

The patrol's task organization establishes the elements and teams needed to accomplish the mission in the objective area and to and from the objective. The patrol leader determines the formation(s) in which the patrol moves to the objective area.

Formations

The proper use of patrol formations is critical to the patrol's success. The squad and fire team formations described in FMFM 6-5 (proposed MCWP 3-11.2), *Marine Rifle Squad*, also apply to infantry patrolling formations. Because the movement of the patrol must be concealed from the enemy, the patrol normally moves through terrain that provides concealment. Control of the patrol in this type of terrain is difficult; thus the column formation, which is easily controlled, is normally used. However, as various types of terrain are encountered, the patrol leader uses the same considerations in determining the appropriate formation used in other infantry operations.

The standard squad and fire team formations are adaptable to a patrol. The patrol may change formations en route to match the situation and terrain. The patrol leader may have to sacrifice some control for better dispersion or give up some speed for greater stealth and more security. Other considerations include—

- Visibility, weather, terrain, and vegetation will influence dispersion and control of individuals and units. These factors may also affect the enemy; if visibility is good for the patrol, it is also good for the enemy. Two pieces of luminous tape worn on the back of the collar will aid in control and movement on dark nights. The collar is turned down when near the enemy. The tape can also be worn on the back of the cap, but should be covered or removed when near the enemy.

- Preserving the integrity of fire units (fire teams and, if attached, machine-gun teams) is of primary importance. If team members are detached from a machine-gun team, the unit integrity is lost and effectiveness is reduced. The patrol leader must also position fire units so as not to mask their fires.
- All-around defense of the patrol must not be sacrificed under any circumstances. The conventional squad and platoon formations provide adequate firepower in any direction required. When attachments are made to the patrol, the attachments are positioned within the formation to enhance the firepower of the patrol. If a fire unit, such as a machine-gun team or squad, is attached, it is incorporated into the all-around defense of the patrol by modifying the conventional formation (see fig. 11-1). It is permissible to employ machine-gun teams individually during movement. However, assault rocket squads and teams should be employed primarily as rifle fire units for movement. Firing the SMAW or AT-4 from within a patrol formation can present a serious back-blast danger to patrol members and should only be fired on the patrol leader's direction.
- Time allotted for mission accomplishment is also a major consideration. In selecting the formations, the patrol leader must consider the speed of the movement required to meet the time constraints (if any) imposed on the patrol. If required to meet a time schedule, a formation that permits rapid movement should be used. Speed, however, must never be permitted to force the patrol leader to make rash tactical decisions.

Exercise of Control

The patrol leader is positioned for best control over the patrol. The assistant patrol leader moves at or near the rear of the patrol. Other subordinate leaders move with their elements. All patrol members assist by staying alert and passing on signals and orders. A signal to halt may be given by any patrol member, but the signal to resume movement is given only by the patrol leader.

Arm-and-hand signals are the primary means of communication within a patrol and should be used exclusively when near the enemy. All members must know the standard infantry signals (refer to FMFM 6-5), as well as any special signals required, and be alert to receive and pass them to other members.

The patrol leader should speak just loudly enough to be heard. At night, or when close to the enemy, the patrol leader halts the patrol and has subordinate leaders come forward. They speak in a low voice and then pass the information to their subordinates by moving from member to member.

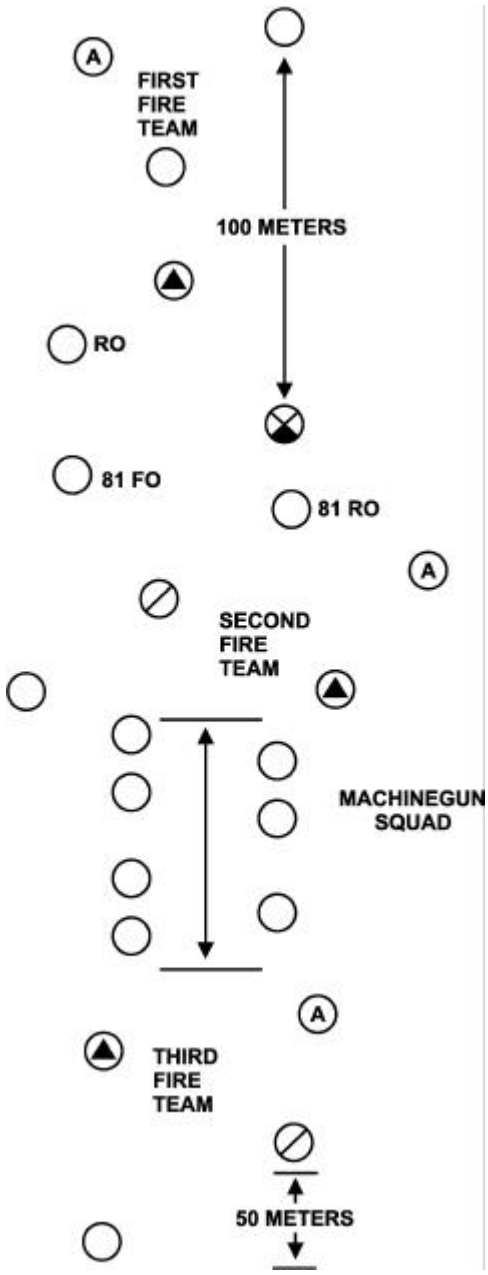


Figure 11-1. Squad Patrol with Attached Mortar Forward Observer Team and Machine Gun Squad.

Radios provide a means of positive control within a large patrol; however, radios should be used only when arm-and-hand signals or face-to-face contact between the patrol leader and subordinate leaders is impractical. When close to the enemy, words are

spoken into the microphone with hands cupped over it in a low voice.

Other sound signals may be used if the patrol leader is sure they serve the purpose intended. Planned sound signals are rehearsed before starting on the patrol. Sound signals used must be simple, natural sounds that are few in number and easily understood. Bird and animal calls are seldom satisfactory.

Infrared equipment, such as the sniper scope and infrared filters for the flashlight, may be used as means of sending and receiving signals and maintaining control at night.

Luminous tape may be used to assist in control at night. Small strips on the back of the cap or collar of patrol members aid in keeping visual contact with the front member. However, the luminous tape must be covered when near the enemy.

An important aspect of control is accounting of personnel, especially after crossing danger areas, enemy contacts, halts, and exiting and re-entering friendly lines. The patrol leader may arrange for the last member to send up the count automatically after crossing danger areas, enemy contact, and halts. In large patrols or when moving in a formation other than a column, subordinate leaders check members and report the count to the patrol leader by the quickest method appropriate to the circumstances.

Navigation

One or more members are assigned as navigators for the patrol. Their function is to assist the patrol leader in maintaining direction by the use of the compass.

The patrol leader assigns at least two members as pacers to keep track of the distance from point to point. The average of their count is used to approximate the distance traveled. Pacers are separated so they do not influence each other's count. Pacers must know how to convert their own paces to meters.

The route is divided into increments, with each increment starting at a recognizable point on the ground. The pacers begin their counts from zero at the beginning of each leg. This makes the pace count easier to keep and checks for accuracy.

The pace count is sent forward when the patrol leader turns to the member behind and in a low voice says, "send up the pace" or uses the arm-and-hand signal of tapping his boot. This signal is passed to both pacers, who in turn send up the pace count in meters; for example, "two-hundred" or "one-seven-five."

Patrol members must understand that the counts of both pacers are sent forward. The patrol leader must know the counts of both men in order to check them.

Security

The patrol is dispersed consistent with control, visibility, cover, and concealment. Scouts are employed to the front, flanks, and rear of the patrol to provide security. For the patrol members traveling in the main body of the patrol, areas of responsibility are assigned to the front, flanks, and rear. Scouts are the eyes and ears of the patrol leader. They move when and where directed by the patrol leader and maintain contact with the patrol leader at all times, except when momentarily obscured by vegetation or other terrain features.

Front

Small patrols (squad size) may employ from one scout up to a fire team as the point, depending on the enemy situation, terrain, and route being followed by the patrol. Normally, squad-size patrols will use two scouts as the point. The point is responsible for investigating the route of advance immediately to the front of the patrol.

The point moves as far ahead of the patrol as visibility and terrain permit. When visibility is good, the point may precede the main body by as much as 100 meters. The point travels right and left ahead of the patrol, searching the area over which the patrol will pass.

The point maintains direction by knowledge of the general route to be followed and visual contact with the patrol leader. The patrol leader or the navigator ensures that the point is proceeding correctly.

The point, which stays far enough ahead of the patrol to provide security, is not a trail breaker for the patrol. If the point loses contact with the patrol, the point waits for the main body to catch up or moves rearward if contact is not quickly regained.

One of the navigators may be positioned with the point. One or more members works as the point while the other is the navigator.

Flank

Flank security for a patrol of squad size or less may be provided by using one or two members on either flank. If two scouts are assigned to a flank, one is positioned to observe the patrol leader and the other works farther out from the patrol. The scout who must observe the patrol leader remains within a maximum distance of 100 meters. The scout farther out remains in sight of the inside scout but normally does not move more than 20 or 25 meters away and remains prepared to relieve flank security regularly. Moving through dense woods or jungle may render the use of flank security impractical because of reduced visibility. In such cases, it moves with the patrol itself, but maintains observation to its assigned flanks.

Rear

A small patrol normally has only one rifleman assigned as rear security. An interval between the member assigned as rear security and the last Marine of the patrol is maintained at the limit of visibility, up to 50 meters. This member maintains rear security for the patrol by constantly observing to the rear.

Halting

Speed of movement is slower at night than in day patrols and reduces the danger of a Marine becoming separated from the patrol. The patrol occasionally halts to observe and listen for enemy activity; this is called a security halt. Upon signal, when reaching a danger area and periodically throughout movement en route, every member freezes in place, remains quiet, observes, and listens. It may be necessary to call a security halt just after departing friendly areas and just before entering friendly areas.

The patrol may halt briefly to send a message, eat, rest, check direction, or make a reconnaissance. The area selected should provide adequate concealment and cover, as well as favor the defense. All-round security is established and the patrol leader ensures all members move out when the patrol resumes movement. (For extended halts, see paragraph 11005.)

Infiltration

The disposition of enemy forces may sometimes prevent a patrol from entering the enemy occupied area as a unit; however, pairs of scouts or fire teams may slip through without being discovered. (Refer to FMFM 6-5 for infiltration techniques and procedures).

11003. CONTROL MEASURES FOR MOVEMENT

Checkpoints

A checkpoint is a predetermined point on the surface of the Earth used as a means of controlling movement, a registration target for fire adjustment or reference for location (JP 1-02). Checkpoints are a means of control between the parent unit and the patrol. These locations are decided upon and coordinated before the patrol leaves, so that both the patrol members and parent unit will know the patrol's location when it reports in. The parent unit can follow the progress of the patrol without transmitting coordinates over the radio that the enemy could monitor.

Rally Points

A rally point is an easily identifiable point on the ground where units can reassemble and reorganize if they become dispersed (MCRP 5-12C). It should provide cover and concealment, be defensible for at least a short time, and be easily recognized and known to all patrol members. All rally points are considered and identified as tentative rally points until they are occupied, found to be suitable, and designated as rally points by the patrol leader.

Initial Rally Point

The initial rally point is within friendly lines where the patrol can rally if it becomes separated before departing the friendly area or before reaching the first en route rally point. It may be the assembly area where the patrol waits while the patrol leader contacts the last friendly position through which the patrol will pass. The location of the initial rally point must be coordinated with the forward unit commander.

En route Rally Points

En route rally points are between the initial rally point and the objective rally point; and from the objective rally point back to the point where the patrol reenters friendly lines. They are determined as the patrol passes through a likely area that is suitable for a rally point.

Objective Rally Point

The objective rally point is located nearest the objective where the patrol makes final preparations prior to approaching the objective. It also serves as a location where the patrol reassembles after completing actions on the objective. The objective rally point must

be suitable to accommodate those activities accomplished prior to actions on the objective. This position must provide the patrol concealment from enemy observation and, if possible, cover from enemy fires. It may be located short of, to a flank or beyond the objective. It should be out of sight, sound, and small-arms range of the objective area. The patrol leader's reconnaissance of the objective is made from this position; it is the release point from which patrol elements and teams move to the objective to accomplish the mission.

Rally Point Selection

The patrol leader selects likely locations for tentative rally points during reconnaissance or map study. A tentative rally point must be confirmed and announced after examination proves suitability. A tentative initial rally point and a tentative objective rally point are always selected and identified in the patrol order. If necessary, the patrol leader selects additional rally points en route as suitable locations are reached. When the patrol reaches a danger area that cannot be bypassed, such as an open meadow or stream, the patrol leader selects a rally point on both the near and far side. If good locations are not available, the patrol leader designates the rally points in relation to the danger area. The patrol leader will say, for example, "50 meters this side of the trail" or "50 meters beyond the stream."

Rally Point Use

The initial rally point and en route rally points are designated to enable the patrol to reassemble if it is unavoidably separated or dispersed. Identifying features are pointed out. The patrol leader ensures that the information is passed to all patrol members. When crossing a danger area, a near side rally point and a far side rendezvous point are designated. These rally points should only be used when all other methods of retaining control of the patrol have failed. The success of the patrol may be jeopardized if it is dispersed and cannot rally expeditiously.

If the patrol has left the friendly area and becomes dispersed, patrol members return to the last designated rally point (the initial or an en route rally point) unless the patrol leader gives other instructions.

As previously noted, the patrol leader selects two rally points at the near and far sides of danger areas that cannot be bypassed. If the patrol becomes separated or dispersed at a danger area, and there has been no enemy contact, the patrol should reassemble at the rally point on the far side of it. If, however, the patrol is separated or dispersed at a danger area as a result of enemy contact, members who have already crossed the danger area assemble and reorganize at the rally point on the far side; members who have not crossed assemble and reorganize at the rally point on the near side. In the absence of the patrol leader and unless directed otherwise, the senior member at the rally point on the near side takes charge, attempts to move the rallied patrol members to the rally point on the far side, and rejoins the remainder of the patrol.

Rally Point Actions

The patrol leader plans the actions to be taken at rally points and instructs the patrol accordingly in the patrol order. Planned actions at the initial rally point and en route rally points must provide for the continuation of the patrol as long as there is a reasonable chance to accomplish the mission. Plans for actions at rally points should provide for—

- Recognition signals for assembly at rally points.
- Minimum number of members and maximum amount of waiting time required before the senior member at the rally point moves the rallied patrol members onward toward the objective or returns to friendly lines.
- Instructions for patrol members who find themselves alone at a rally point.

11004. PRECAUTIONS AT DANGER AREAS

A danger area is any place where the patrol is vulnerable to enemy observation or fire (open areas, roads, trails, and obstacles such as barbed wire, minefields, rivers and streams, and lakes). Any known or suspected enemy position the patrol must pass is also a danger area. The patrol leader plans for crossing each danger area and includes these plans in the order.

The patrol reconnoiters the near side of a danger area first, then the patrol leader sends scouts to reconnoiter the far side. Once the scouts report that the far side is clear of the enemy, the remainder of the patrol crosses the danger area. As each individual or group crosses the danger area, they are covered by those remaining and by those who have successfully crossed. Enemy obstacles are avoided since they are usually covered by fire.

In crossing a river, the near bank is reconnoitered first; then the patrol is positioned to cover the far bank. Scouts are sent across to the far bank. After the far bank has been reconnoitered and the scouts report that it is clear of the enemy, the patrol crosses as rapidly as possible. This may be done individually or in pairs. If crossing the river requires swimming, the patrol uses improvised rafts to float equipment, weapons, and ammunition across. (Refer to MCRP 3-02C, *Water Survival Handbook.)*

A road or trail is crossed at or near a bend or where the road is narrow. Observation is restricted and, if the enemy is present, the patrol is exposed as short a time as possible. The near side is reconnoitered first, then scouts are sent across to reconnoiter the far side. This includes reconnoitering the tentative rally point on the far side. Once the scouts report "all clear," the remainder of the patrol crosses rapidly and quietly.

If the patrol must pass close to an enemy position, it takes advantage of battlefield noises to cover the sounds of movement. If supporting fires are available, the patrol leader can call for them to divert the enemy's attention as the patrol passes.

11005. HIDE

When a patrol is required to halt for an extended period in an area not protected by friendly troops, the patrol moves into a location which, by the nature of the surrounding terrain, provides passive security from enemy detection. Such an assembly area is termed a *hide*. To establishment a hide—

- Cease all movement during daylight hours to avoid detection.
- Hide the patrol for an extended period while the patrol leader conducts a detailed reconnaissance of the objective area.
- Rest and reorganize after extended movement.
- Reorganize after a patrol has infiltrated the enemy area in small groups.

The patrol leader's plan must include tentative hide locations when the patrol's mission dictates an extended halt within enemy areas. These tentative locations must be confirmed by actual ground reconnaissance prior to occupation by the patrol. The plan for a hide includes both passive and active security measures.

Passive security measures are—

- Avoid built-up areas.
- Select an area remote from all human habitation.
- Avoid known or suspected enemy positions.
- Avoid ridge lines, topographic crests, valleys, lakes, and streams.
- Avoid roads and trails.
- Avoid open woods and clearings.
- Select areas offering dense vegetation, preferably bushes and trees that spread out close to the ground.

Active security measures—

- Establish security covering all likely avenues of approach into the site.
- Establish communications (wire, radio, signal, runner) with posted security to provide early warning of enemy approach.
- Select an alternate area for occupation if the original hide is compromised or found unsuitable.
- Plan for withdrawal in the event of discovery.
- Establish an alert plan with a certain percent of the personnel awake at all times.
- Organize the elements of the patrol so necessary activities can take place with a minimum amount of movement.

The size of the area physically occupied by a patrol in a hide and the number of security posts required are governed by the terrain, quantity and quality of cover and concealment, and size of the patrol.

If the situation permits, a hide can also be used as the final preparation position and/or objective rally point.

11006. IMMEDIATE ACTIONS UPON ENEMY CONTACT

A patrol may make contact with the enemy at any time. Contact may be through observation, a meeting engagement or ambush. Contact may be visual, in which the patrol sights the enemy but is not itself detected. When this is the case, the patrol leader can decide whether to make or avoid physical contact, basing his decision on the patrol's assigned mission and capability to successfully engage the enemy unit.

When a patrol's assigned mission prohibits physical contact (except that necessary to accomplish the mission), its actions are defensive in nature. Physical contact, if unavoidable, is broken as quickly as possible and the patrol, if still capable, continues its mission.

When a patrol's assigned mission permits or requires it to seek or exploit opportunities for contact (as in the case of a combat patrol), its actions are offensive in nature, immediate, and positive.

In patrolling, contacts (visual or physical) are often unexpected at very close ranges, and short in duration. Effective enemy fire often provides leaders little or no time to fully evaluate situations and issue orders. In these situations, immediate action provides a means for swiftly initiating positive offensive or defensive action, as appropriate.

Two types of physical contact with the enemy are meeting engagement and ambush. Meeting engagement is a combat action that occurs when a moving force, incompletely deployed for battle, engages an enemy at an unexpected time and place. It is an accidental meeting where neither the enemy nor the patrol expect contact and are not specifically prepared to deal with it. An ambush is a surprise attack from a concealed position.

Immediate Actions

Immediate actions are designed to provide swift and positive small unit reaction to visual or physical contact with the enemy. They are simple courses of action in which all Marines are well trained. Minimal signals or commands are required and they are developed as needed for the combat situation. The signals can, in many cases, be initiated by any member of the unit. It is not feasible to attempt to design an immediate action drill to cover every possible situation. It is better to know the immediate action drill for each of a limited number of situations that may occur during a patrol. Arm-and-hand signals associated with immediate actions—such as FREEZE, ENEMY IN SIGHT, and HASTY AMBUSH RIGHT or LEFT—are contained in FMFM 6-5 (proposed MCWP 3-11.2).

Immediate Halt

When the patrol detects the enemy but is not itself detected, the situation requires the immediate, in-place halt of the patrol. The first member visually detecting the enemy gives the silent signal for FREEZE. Every member halts in place, weapon at the ready, and remains absolutely motionless and quiet until further signals or orders are given.

Air Observation and/or Attack

These actions are designed to reduce the danger of detection from aircraft and casualties from air attack.

When an enemy or unidentified aircraft that may detect the patrol is heard or observed, the appropriate immediate action drill is FREEZE. The first member hearing or sighting an aircraft that may be a threat signals FREEZE. Every member halts in place until the patrol leader identifies the aircraft and gives further signals or orders. Members of the patrol must not look up at the aircraft as sunlight can reflect off their faces even when camouflaged.

When an aircraft detects a patrol and makes a low level attack, the immediate action drill air attack is used. The first member sighting an attacking aircraft shouts, "AIRCRAFT," followed by the direction of the incoming attack: FRONT, LEFT, REAR or RIGHT. The patrol moves quickly into line formation, well spread out, at right angles to the aircraft's direction of travel. As each member comes on line, the member hits the ground, using available cover, then positions the body perpendicular to the aircraft's direction of travel, to present the shallowest target possible (see fig. 11-2 on page 11-8). Between attacks (if the aircraft returns or if more than one aircraft attacks), patrol members seek better cover. Attacking aircraft are fired upon only on command of the patrol leader.

Meeting Engagement

Hasty Ambush. This immediate action is used to avoid contact and to prepare to initiate an unplanned ambush on the enemy. It may often be a subsequent action after the command freeze. When the signal HASTY AMBUSH is given (by the point member, patrol leader or another authorized patrol member), the entire patrol moves quickly to the right or left of the line of movement, as indicated by the signal, and takes up the best available concealed firing positions (see fig. 11-3 on page 11-9). The patrol leader initiates the ambush by opening fire and shouting, "FIRE"; thus ensuring initiation of the ambush if the weapon misfires. If the patrol is detected before this, the first member aware of detection initiates the ambush by firing and shouting. The patrol leader may decide not to initiate the ambush in order to avoid contact unless the patrol is detected. When used as an offensive

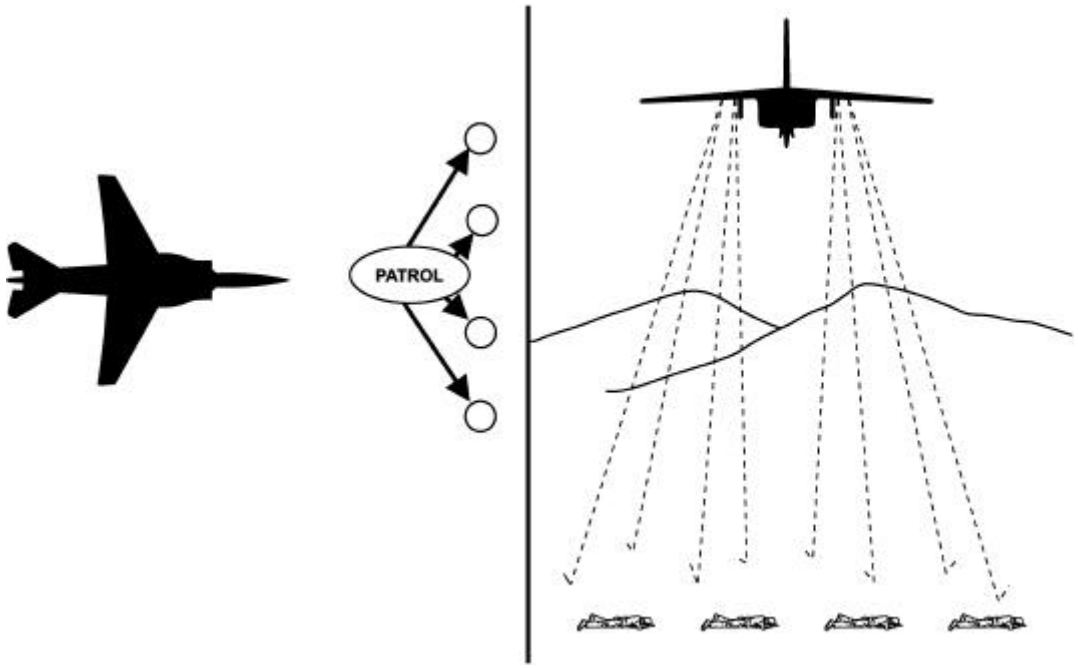


Figure 11-2. Immediate Action, Air Attack.

measure, the enemy is allowed to advance until he is in the most vulnerable position before the ambush is initiated. An alternate means for initiating the ambush is to designate an individual (for example, point or last member) to open fire when a certain portion of the enemy unit reaches or passes that member.

Immediate Assault. This immediate action drill is used defensively to make and quickly break undesired but unavoidable contact (including ambush) and offensively to decisively engage the enemy (including ambush). When used in a meeting engagement, members nearest the enemy open fire and shout, "CONTACT," followed by the direction of the incoming attack: FRONT, LEFT, REAR or RIGHT. The patrol moves swiftly into line formation and assaults (see fig. 11-4).

Defensive Measures

When used defensively, the assault is stopped if the enemy withdraws and contact is broken quickly. If the enemy stands fast, the assault is carried through the enemy positions and movement is continued until contact is broken.

Offensive Measures

When used offensively, the enemy is decisively engaged. Escapees are pursued and destroyed until orders to break contact are given by the patrol leader. If the patrol is fired upon from beyond 50 meters, the patrol must break contact as quickly as possible and continue the mission. If it engages the enemy any longer than necessary to break contact, it may put the mission in jeopardy.

Fire and Maneuver

Fire and maneuver is one means to break contact. One portion of the patrol returns the enemy fire while another portion moves by bounds away from the enemy. Each portion of the patrol covers the other by fire until contact is broken by all.

Clock System

The clock system is another means to break contact. Twelve o'clock is the direction of movement of the patrol. The patrol leader shouts a direction and a distance. For example: "TEN O'CLOCK-TWO HUNDRED," means the patrol should move in the direction of ten o'clock for 200 meters. Patrol members keep their same relative positions as they move so the original formation is not disrupted. Subordinate leaders must be alert to ensure that the members of their elements and teams receive the correct order and move as directed.

Counter Ambush

When a patrol is ambushed, the immediate action drill used depends on whether the ambush is a near ambush

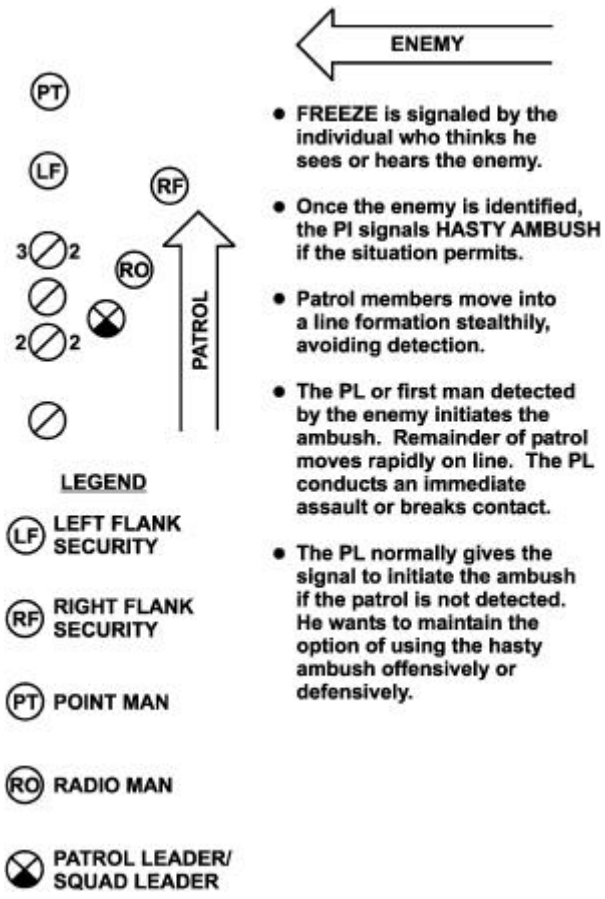
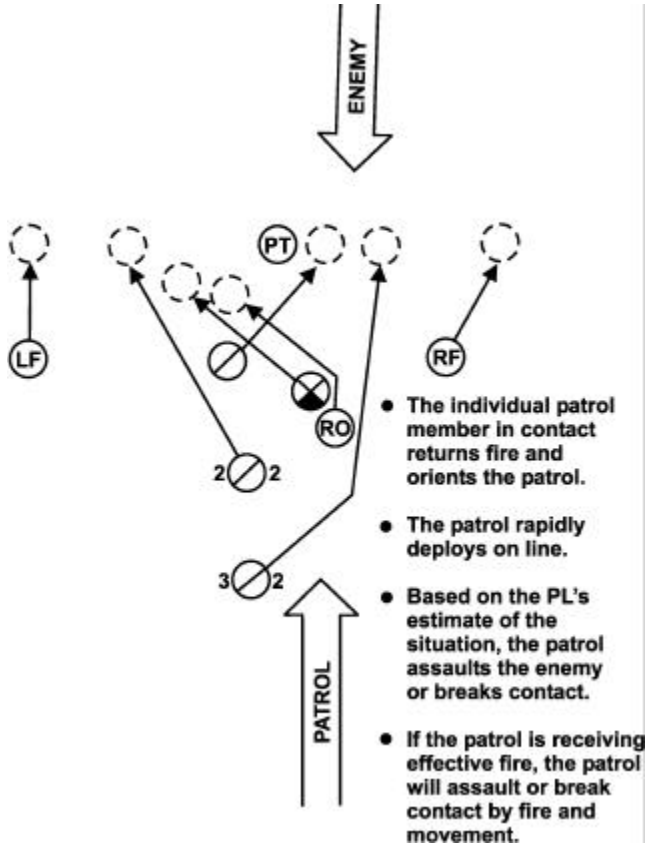

ENEMY
PT
LF
RF
RO
PATROL
3
2
2
2
LEGEND
LEFT FLANK SECURITY
RIGHT FLANK SECURITY
POINT MAN
RADIO MAN
PATROL LEADER/ SQUAD LEADER
• FREEZE is signaled by the individual who thinks he sees or hears the enemy.
• Once the enemy is identified, the PI signals HASTY AMBUSH if the situation permits.
• Patrol members move into a line formation stealthily, avoiding detection.
• The PL or first man detected by the enemy initiates the ambush. Remainder of patrol moves rapidly on line. The PL conducts an immediate assault or breaks contact.
• The PL normally gives the signal to initiate the ambush if the patrol is not detected. He wants to maintain the option of using the hasty ambush offensively or defensively.

Figure 11-3. Immediate Action, Hasty Ambush.


ENEMY
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2
2
3
2
PATROL
• The individual patrol member in contact returns fire and orients the patrol.
• The patrol rapidly deploys on line.
• Based on the PL's estimate of the situation, the patrol assaults the enemy or breaks contact.
• If the patrol is receiving effective fire, the patrol will assault or break contact by fire and movement.

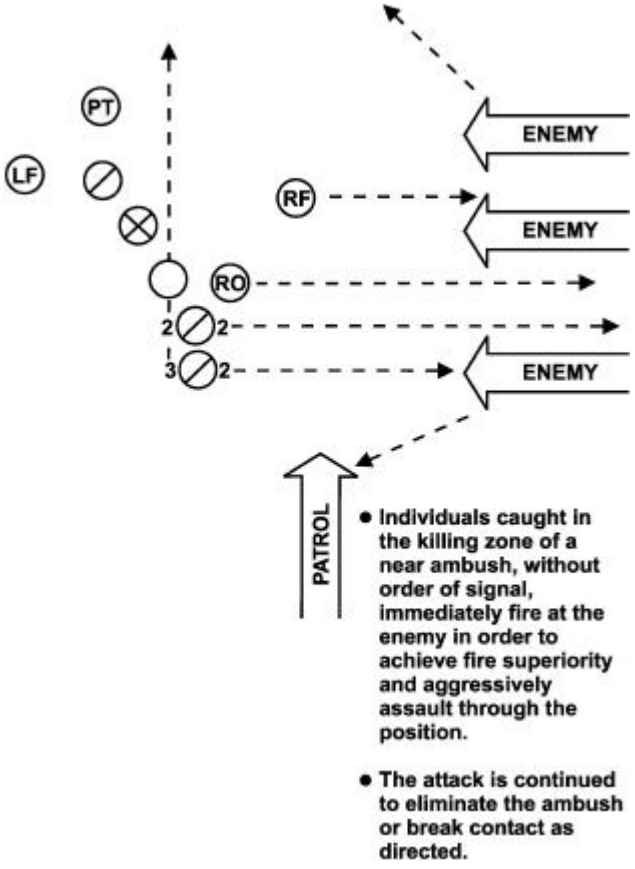
Figure 11-4. Immediate Action, Immediate Assault.

(the enemy is within 50 meters of the patrol) or a far ambush (the enemy is beyond 50 meters of the patrol). Fifty meters is considered the limit from which the ambushed patrol can effectively launch an assault against the enemy.

Near Ambush. In a near ambush, the killing zone is under very heavy, highly concentrated, close range fires. There is little time or space for members to maneu-ver or seek cover. The longer they remain in the killing zone, the greater the chance they will become casualties. Therefore, if members in the killing zone are attacked by a near ambush, they immediately assault without order or signal directly into the ambush position, occupy it, and continue the assault or break contact, as directed. This action moves them out of the killing zone, prevents other elements of the ambush from firing on them without firing on their own members, and provides positions from which other actions may be taken (see fig. 11-5 on page 11-10). Members not in the killing zone maneuver against the enemy as directed. The assault continues until all patrol members are outside of the killing zone.

Far Ambush. In a far ambush, the killing zone is also under very heavy, highly concentrated fires, but from a greater range. This greater range provides members in the killing zone maneuver space and some opportunity to seek cover at a lesser risk of becoming a casualty. If attacked by a far ambush, members in the killing zone, without order or signal, immediately return fire, take the best available positions, and continue firing until directed otherwise. Members not in the killing zone maneuver against the ambush force, as directed (see fig. 11-6 on page 11-10). The assault is continued against the enemy or until the order to break contact is given.

In each situation, the success of the counter ambush employed depends on the members being well trained in quickly recognizing the distance from which an ambush is initiated and well rehearsed in the proper reaction.


PT
LF
RF
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2
2
3
2
ENEMY
ENEMY
ENEMY
PATROL
• Individuals caught in the killing zone of a near ambush, without order of signal, immediately fire at the enemy in order to achieve fire superiority and aggressively assault through the position.
• The attack is continued to eliminate the ambush or break contact as directed.

Figure 11-5. Near Ambush.

11007. PATROL LEADER'S ACTION IN A DEVELOPING SITUATION

While good patrolling depends on good planning, the patrol leader's plan must be flexible. Every combat situation develops differently than expected, and the patrol leader must be ready to quickly adapt to the situation as it develops. One of the most difficult tasks in battle is to recognize the correct moment for making a decision. Generally, it is more difficult to determine the moment for making a decision than it is to formulate the decision itself. When the situation demands, decisions must be made promptly without waiting for more information. In a developing situation, the patrol leader should use the following questions as a guide for battlefield decisionmaking:

- How has the situation changed?
- How does the change affect mission accomplishment and the immediate superior's mission?
- Must a decision be made now?
- What are the options?
- Which option best serves the mission and the unit as a whole?
- Which option offers the greatest chance of success?

11008. RETURN FROM OBJECTIVE AREA

After performing actions in the objective area, the patrol reassembles at the objective rally point. This phase of the patrol is perhaps the most difficult and dangerous. Patrol members are experiencing fatigue, emotional letdown, and wounds; they may be low on water and ammunition. Above all, the enemy was likely alerted if not in pursuit. At this point, the patrol leader must move the patrol rapidly but carefully and maintain patrol security at a high level. In returning to friendly lines, the patrol neither uses nor travels near the same route used to get to the objective area. The enemy may have that route covered. For information on reentry of friendly lines, refer to paragraph 11001.

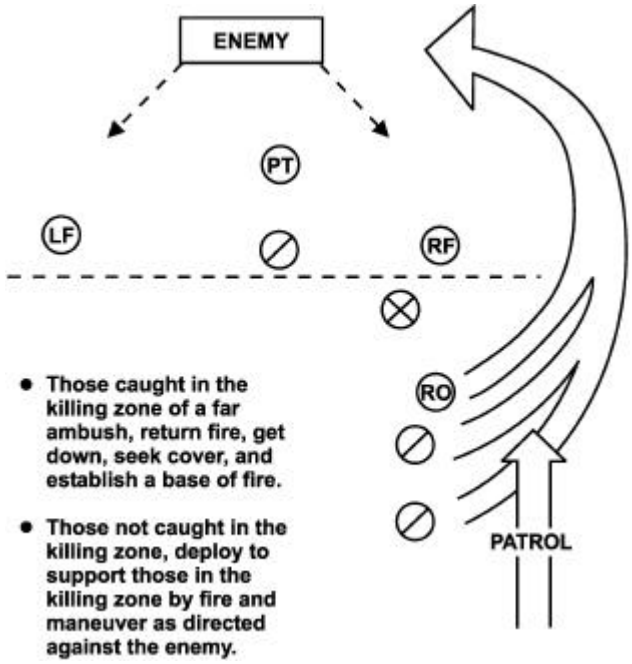
ENEMY
PT
LF
RF
RO
PATROL
• Those caught in the killing zone of a far ambush, return fire, get down, seek cover, and establish a base of fire.
• Those not caught in the killing zone, deploy to support those in the killing zone by fire and maneuver as directed against the enemy.

Figure 11-6. Far Ambush.

CHAPTER 12. RECONNAISSANCE PATROLS

The commander needs accurate, timely information about the enemy and the terrain the enemy controls to assist in making tactical decisions. Reconnaissance patrols are one of the most reliable means for obtaining this information. These patrols engage the enemy only when necessary to accomplish their mission or for protection. They generally avoid combat, accomplish the mission by stealth, and do not maintain contact with the unit that sent them out. A reconnaissance patrol is capable of carrying the search for information into the area occupied by enemy forces—usually beyond the range of vision of friendly ground observation posts—and examining objects and events at close range.

12001. GENERAL MISSIONS

General missions for reconnaissance patrols include gathering information about location and characteristics of friendly or hostile positions and installations, terrain (routes, stream crossings), and obstacles.

12002. SPECIFIC MISSIONS

Locate the Enemy

Reconnaissance patrols try to determine the—

- Location of enemy forces, installations, and equipment.
- Identification of enemy units and equipment.
- Strength of enemy forces.
- Disposition of enemy forces.
- Movement of enemy personnel and equipment.
- New or special types of weapons.
- Presence of mechanized units.
- Unusual enemy activity.
- Presence of NBC equipment.

Reconnaissance of Enemy Wire Obstacles

A patrol with the mission of investigating enemy-emplaced wire obstacles employs a formation providing for all-around security and takes precautions against being observed by the enemy. The patrol leader and one Marine inspect each gap and establish its location by means of compass bearings to prominent objects in the rear of enemy or friendly positions or through the use of global positioning satellite receivers.

Reconnaissance of Contaminated Areas

A patrol with the mission of investigating a contaminated area reconnoiters and marks the area's boundaries. Patrol members wear protective clothing and field protective masks. The patrol leader reports the extent of the area, the ttype of agent used, the terrain and vegetation and the method of marking the contaminated area. A sketch of the contaminated area, prepared by the patrol leader, should be included in the patrol report.

Reconnaissance of Enemy Minefields

Patrols assigned to reconnoiter enemy minefields are often composed of specially trained personnel. The type of mine is identified and the possibility of bypassing the area determined.

Reconnaissance of Terrain

The reconnaissance patrol is particularly suited for gathering information about the terrain within their area of operations. (Refer to MCRP 2-15.3B, *Reconnaissance Reports Guide*.) Commanders must know the location and condition of bridges, streams, and roads in order to make proper plans for the movement of troops. The following information should be obtained by a reconnaissance patrol assigned such missions:

- Bridges:
  - Maximum load capacity.
  - Material used in construction (wood, stone, concrete or steel).

- Material used for abutments (dirt, wood, masonry, concrete).
- Type and number of supporting members of the bridge.
- Condition and dimensions of bridge flooring.
- Presence or absence of mines and demolition charges on the bridge and at entrances/exits.
- Terrain crossed (ravine, stream, road).
- Primary use (rail, auto, foot).
- Location and type of an alternate crossing if bridge is unusable.

- Streams and fords:
  - Width and depth of stream.
  - Composition of the bottom (mud, sand, gravel, rock).
  - Speed of current in miles per hour.
  - Composition and gradient of banks.
  - Surrounding terrain and vegetation cover.
- Roads:
  - Width.
  - Composition of surface.
  - Condition.
  - Road blocks.
  - Gradient/degrees of slopes.
  - Curves (location and length).
  - Pitch and culvert locations.
  - Primary use and frequency of use.

12003. TYPES OF RECONNAISSANCE

Route

Route reconnaissance is a directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route. (Refer to MCRP 5-12C.) It is also described as a form of reconnaissance focused along a specific line of communications—such as a road, railway, or waterway—to provide new or updated information on route conditions and activities along the route. (Refer to MCRP 5-12A, *Operational Terms and Graphics*.)

A route reconnaissance normally precedes the movement of forces. It provides detailed information about a specific route and the surrounding terrain that could be used to influence movement along that route. Considerations include trafficablility, danger areas, critical points, vehicle weight and size limitations, and locations for friendly obstacle emplacement.

The objective area is normally defined by a line of departure, a route, and a limit of advance.

Area

An area reconnaissance is a directed effort to obtain detailed information concerning the terrain or enemy activity within a prescribed area such as a town, ridge line woods or other features critical to operations. (Refer to MCRP 5-12C.) An area reconnaissance could also be made of a single point, such as a bridge or installation. (Refer to MCRP 5-12A.)

Emphasis is placed on reaching the area without being detected. Enemy situations encountered en route are developed only enough to allow the reconnoitering unit to report and bypass.

Zone

A zone reconnaissance is a directed effort to obtain detailed information concerning all routes, obstacles (to include chemical or radiological contamination), terrain, and enemy forces within a zone defined by boundaries. A zone reconnaissance is normally assigned when the enemy situation is vague or when information concerning cross-country trafficability is desired. (Refer to MCRP 5-12C.)

The commander specifies specific routes or areas of interest within the zone. The zone to be reconnoitered usually is defined by a line of departure, lateral boundaries, and a limit of advance.

12004. TASK ORGANIZATION

A reconnaissance patrol is organized around the current structure of the Marine rifle squad with one or more of the squad's fire teams assigned as the reconnaissance element to reconnoiter or maintain surveillance over the objective. At least one fire team acts as a security element whose functions are to—

- Secure the objective rally point (see para. 11003).
- Give early warning of enemy approach.
- Protect the reconnaissance unit.

Reinforcing the squad is based on METT-T. If two squads are required, then the mission should be assigned to a platoon.

A company may send a reconnaissance patrol to specifically reconnoiter a given area (a riverbed or a bridge), or to maintain surveillance on a particular streambed for the next four nights. Reconnaissance patrols perform three basic functions en route to and from the objective:

- Provide control.
- Provide security while moving and in the objective area.
- Conduct reconnaissance or surveillance.

Depending on the size of the reconnaissance patrol, an element must be tasked to reconnoiter the area or zone. In the case of a surveillance mission, two teams are recommended to share the same task (so one could lay up and rest, while the other lays low and hides to maintain strict silence and no movement while surveillance is being maintained on the objective). Whatever the case, each unit that has a surveillance mission or reconnaissance mission must be thoroughly briefed as to what essential elements of information are to be collected as well as their location in the objective area.

The patrol should be organized with one or two fire teams to actually conduct the reconnaissance mission and the remaining fire team to provide security. Each fire team should be prepared to assume either mission. A small area reconnaissance patrol needs only one fire team for the assigned mission. A patrol with a wider area reconnaissance mission should use two fire teams to physically conduct the mission and one fire team for cover and/or security.

The security element for a reconnaissance patrol should be organized to cover the likely avenue of approach into the objective area, to protect the units conducting the reconnaissance, and to cover the objective rally point.

The variations of the special organization for reconnaissance patrols illustrate the patrol leader's flexibility in organizing the patrol to meet mission requirements. The patrol leader is not limited to the variations reflected herein but can choose any special organization as long as that task organization accommodates the requirement for command and control, reconnaissance, and security.

12005. SIZE OF RECONNAISSANCE PATROLS

A reconnaissance patrol should be kept to the minimum number of personnel required to accomplish the mission. A mission requiring a patrol to remain away from its unit for a considerable period of time, or one requiring a patrol to send back information by messenger, increases the size of the patrol. Reconnaissance patrols seldom exceed a squad in strength. Unit integrity should be preserved whenever possible. Intelligence personnel, interpreters, and other specialists, such as radio operators or engineers, are assigned to a patrol if the particular mission requires.

12006. RECONNAISSANCE EQUIPMENT

Patrol members are armed and equipped as necessary for accomplishing the mission. The automatic rifle in each fire team provides a degree of sustained firepower in case of enemy contact. The patrol should have at least two: pairs of binoculars, pairs of wire cutters, maps, compasses, and watches. Night observation equipment may be used. Pencils and small notebooks are carried so notes and sketches can be made. A message book with message blanks and overlay paper is mandatory.

12007. RECONNAISSANCE PATROL ACTIONS AT THE OBJECTIVE AREA

Route

The patrol leader halts and conceals the patrol near the objective area in the final preparation position. The patrol leader then conducts leader's reconnaissance to confirm the plan for positioning the security teams and employing units assigned to the reconnaissance mission. The patrol leader returns to the patrol and positions the security to provide early warning of enemy approach and secure the objective rally point. The reconnaissance unit(s) then reconnoiters the objective area (route). The reconnaissance unit may move to several positions, along or adjacent to the specific route, in order to conduct a thorough reconnaissance. After completing the reconnaissance, each

reconnaissance team moves to the objective rally point and reports to the patrol leader. The patrol then returns to friendly lines and the leader makes a full report.

Area

The patrol leader halts and conceals the patrol near the objective area in the final preparation position. The patrol leader then conducts leader's reconnaissance to pinpoint the objective and confirm the plan for positioning the security teams and employing units assigned the reconnaissance mission. The patrol leader returns to the patrol and positions security to provide early warning of enemy approach and secure the objective rally point. The reconnaissance unit(s) then reconnoiters the objective area. The reconnaissance unit may move to several positions, perhaps making a circle around the objective area, in order to conduct a thorough reconnaissance. When the reconnaissance is completed, the patrol leader assembles the patrol and tells members what has been observed and heard. Other patrol members contribute observations. The patrol then returns to friendly lines and the patrol leader makes a full report.

Zone

The patrol leader halts the patrol at the final preparation position, confirms the plan, and conducts leader's reconnaissance. The patrol leader positions the security team and sends out the reconnaissance team. When the entire patrol is used to reconnoiter the zone, it provides its own security. After completing the reconnaissance, each reconnaissance team moves to the objective rally point and reports to the patrol leader. The patrol then returns to friendly lines.

CHAPTER 13. COMBAT PATROLS

Combat patrols are assigned missions that usually include engaging the enemy. They are fighting patrols. Every combat patrol has a secondary mission: gaining information about the enemy and terrain. Combat patrols are employed in both offensive and defensive combat operations and they assist the parent unit in accomplishing its mission by inflicting damage on the enemy; establishing and/or maintaining contact with friendly and enemy forces; denying the enemy access to key terrain; and probing enemy positions to determine the nature and extent of enemy presence.

13001. TASK ORGANIZATION

A combat patrol is organized around the current structure of the Marine rifle platoon. A combat patrol leader should use the unit's normal organization (fire team, squad, and platoon) in assigning functions, patrol missions, and chain of command. Combat patrols must be able to perform the following four basic functions en route to and from the objective:

- Provide control.
- Provide security.
- Provide support by fire.
- Attack or assault the objective.

A rifle platoon could task-organize as a combat patrol as follows:

- Platoon headquarters (patrol headquarters).
- First squad (security).
- Second squad (support).
- Third squad (assault).

Every combat patrol must—

- Provide a control mechanism in the form of a headquarters.
- Designate a unit (a fire team or squad) to provide security while moving en route to the objective or while at the objective. At the objective area, this unit isolates the objective area, secures the objective rally point, and covers the withdrawal.
- Designate a unit to act as support. This unit provides the base of fire in the attack or covers withdrawals or advances.
- Designate a unit(s) to conduct the attack or assault. This unit(s) engages the enemy at the objective area by fire and maneuver or movement. It also operates immediately in the objective area (searching, demolition, prisoners of war, etc.). Paragraph 9001 outlines the general organization of combat patrols. As in the case with reconnaissance patrols, the task organization of a combat patrol depends on the specific mission assigned. If any special requirements are generated because of the specific mission, the patrol is task-organized to fit the needs of the mission.

13002. EQUIPMENT

Combat patrols are armed and equipped as necessary for accomplishing the mission. In addition to binoculars, wire cutters, compasses, and other equipment generally common to all patrols, it usually carries a high proportion of automatic weapons and grenades. Communications with higher headquarters is important as success of the mission may depend on being able to call for supporting fires. Also, internal radio communications with the units and teams may be useful. However, the patrol must not be so overburdened with equipment as to impede movement or mission accomplishment.

13003. RAID PATROLS

A raid is a surprise attack on an enemy force or installation with the attacking force withdrawing after accomplishing its mission. Raids destroy or capture enemy personnel or equipment, destroy installations, or free friendly personnel who have been captured by the enemy. Patrolling techniques are used in planning and when moveing to and from the objective. (Refer to MCWP 3-41.2, *Raids*.) Surprise, firepower, and

violence of action are the keys to a successful raid. Patrols achieve surprise by attacking—

- When the enemy is least prepared (e.g., during periods of poor visibility such as darkness, rain, fog, or snow).
- From an unexpected direction. (This might be accomplished by approaching through a swamp or other seemingly impassable terrain.)
- With concentration of firepower at critical points within the objective.

Planning

A successful raid requires detailed planning. The leader of a combat patrol engaged in raiding must anticipate probable situations and decide upon definite courses of action to meet them. Rehearsals are imperative.

A raid patrol conducts such missions as destroying an enemy outpost or seizing prisoners from an observation post or lightly defended position.

While preparing for the mission, the patrol leader requests fire support required for the accomplishment of the mission. If practical, artillery and mortars should be employed to isolate the objective to prevent movement of enemy reinforcements into the area.

Execution

The leader's plan must be detailed and complete. All of the considerations outlined in chapter 11 must be covered. Patrol formations must provide for ease of control and all-around security while moving to and from the objective area and provide for rapid and coordinated deployment of the various units once the objective area is reached. The leader's plan usually includes the encirclement of the hostile position—either physically or by fire—in order to isolate it during the assault.

The final simultaneous assault against the objective develops when enemy defensive fires at the objective are suppressed by either friendly fire superiority or surprise. The assault is covered by the fire of the unit assigned the function of support by fire.

Grenades, SMAWs, and demolitions are most effective for clearing bunkers.

Security units are posted to isolate the objective. The patrol leader signals them when the withdrawal begins. As a minimum, security is on each flank and to the rear (at the objective rally point).

Actions at the Objective

The patrol leader halts the patrol near the objective at the final preparation position. Security is established and the leader's reconnaissance is made with appropriate subordinate leaders. When the leaders return to the patrol, they confirm previous plans or announce any changes. Movements are arranged so all units reach their positions simultaneously. This improves the patrol's capability for decisive action, if prematurely detected by the enemy.

The teams of the security element move to positions to secure the objective rally point, give early warning of enemy approach, block avenues of approach into—and prevent enemy escape from—the objective area. As the assault element moves into position, the security element informs the patrol leader of all enemy activity, firing only if detected or on the patrol leader's order. Once the assault element commences action, the security element prevents enemy entry into or escape from the objective area. The security element covers the withdrawal of the assault element (and support element, if employed) to the objective rally point, withdrawing only upon order or prearranged signal.

As the assault element approaches the objective, it deploys early enough to permit immediate assault if detected by the enemy. Each team uses stealth while moving into proper position. On command, or if one or more of the assault element is detected and fired upon by the enemy, the support element opens fire to neutralize the objective, then ceases or shifts fire according to prearranged plans and signals. As supporting fires cease or shift, the assault element assaults the objective. Demolition, search, and other teams are protected by the assault element while they work. On order, the assault element withdraws to the objective rally point.

If a support element is employed, its leader deploys teams to provide fire support for the assault element. Each member of the support element must know the scheme of maneuver to be used by the assault element, specific targets or areas to be neutralized by fire, and the signals that will be employed to commence, shift, and cease fires. The support element withdraws on order of the patrol leader. At the objective rally point,

the patrol leader quickly reorganizes the patrol and begins the return movement to friendly lines.

13004. CONTACT PATROLS

General

Contact patrols establish and/or maintain contact to the front, flanks or rear by—

- Establishing contact with an enemy force when the definite location of the force is unknown.
- Maintaining contact with enemy forces through direct and/or indirect fires, or observation.
- Avoiding decisive engagement with the enemy.

Task Organization and Equipment

Task organization and equipment depend on the known enemy situation and anticipated enemy contact. A patrol sent out to establish contact with an enemy force is organized, armed, and equipped to overcome resistance of light screening forces in order to gain contact with the main enemy force. It is not organized and equipped to engage the main enemy forces in combat. Communication is paramount; radios must be reliable over the entire distance covered.

Actions at the Objective

The patrol leader selects a series of objectives. Once an objective is reached, the patrol leader initiates a planned set of actions in order to establish and maintain contact with the enemy. These plans and actions are guided by the missions to establish or maintain contact—not to engage in decisive combat. Contact with the enemy is maintained for the purposes of surveillance, applying pressure, and preventing seizure of the initiative. If the contact patrol becomes decisively engaged with the enemy, many of the tasks originally assigned to the patrol cannot be accomplished, since the enemy has seized the initiative and friendly forces are not forced to react.

13005. AMBUSH PATROLS

General

An ambush is a surprise attack from a concealed position upon a moving or temporarily halted target. It is one of the oldest and most effective types of military actions. Ambush patrols conduct ambushes of enemy patrols, resupply columns, and convoys. The intent of an ambush is to place the enemy in a dilemma where staying in the kill zone or attempting to move out of it prove equally lethal. The ambush may include an assault to close with and decisively engage the enemy, or the attack may be by fire only.

Purpose of Ambushes

Ambushes are executed for the general purpose of reducing the enemy's over-all combat effectiveness and for the specific purpose of destroying its units. The cumulative effect of many small ambushes on enemy units lowers enemy troop morale and harasses the enemy force as a whole.

Destruction is the primary purpose of an ambush because loss of men killed or captured, and loss of equipment and supplies destroyed or captured, reduces the overall combat effectiveness of the enemy.

Harassment, though less apparent than physical damage, is a secondary purpose of ambushes. Frequent ambushes force the enemy to divert men from other missions to guard convoys, troop movements, and carrying parties. When enemy patrols fail to accomplish their mission because they are ambushed, the enemy is deprived of valuable information. A series of successful ambushes causes the enemy to be less aggressive and more defensive minded. His men become apprehensive, overly cautious, reluctant to go on patrols, seek to avoid night operations, are more subject to confusion and panic if ambushed, and in general, decline in effectiveness.

Classification of Ambushes

A *deliberate ambush* is one in which prior information about the enemy permits detailed planning before the patrol departs for the ambush site. Information needed to plan a deliberate ambush includes the size, composition, and organization of the force to be ambushed; how the force operates; and the time it will

pass certain points or areas. A deliberate ambush may be planned for such targets as—

- Any force if sufficient prior information is known.
- Enemy patrols that establish patterns by frequent use of the same routes or habitually depart and re-enter their own areas at the same point.
- Logistic columns.
- Troop movements.

An *ambush of opportunity* is conducted when available information does not permit detailed planning before the patrol departs. This is the type of ambush that an infantry unit normally conducts. An ambush of opportunity should not be confused with a hasty ambush. An ambush of opportunity is a planned ambush; a hasty ambush is an immediate action. In planning for an ambush of opportunity, the patrol must be prepared to execute any of several courses of action based on the types of targets that may be ambushed and must rehearse prior to departure. The course of action taken is determined when the opportunity for ambush arises.

The patrol leader may be directed to reconnoiter an area for a suitable ambush site, set up at the site selected, and execute an ambush against the first profitable target that appears.

The patrol may depart just after dark, move to a specific point, observe until a designated time, ambush the first profitable target after that time, and return before daylight.

A *hasty ambush* is an immediate action where the patrol makes visual contact with an enemy force and has time to establish an ambush without being detected. The actions for a hasty ambush must be well rehearsed and accomplished through the use of hand and arm signals given from the patrol leader.

Types of Ambushes

There are two types of ambushes: point and area. The *point ambush* is one where forces are deployed to attack along a single killing zone. The *area ambush* is one where forces are deployed as multiple related point ambushes.

A point ambush, whether independent or part of an area ambush, is positioned along the enemy's expected route of approach. Formation of the forces conducting the ambush is important because, to a great extent, the formation determines whether a point ambush is able to deliver the heavy volume of highly concentrated fire necessary to isolate, trap, and destroy the enemy.

The ambush formation to be used is determined by careful consideration of possible formations and the advantages and disadvantages of each in relation to—

- Terrain.
- Visibility.
- Forces.
- Weapons and equipment.
- Ease or difficulty of control.
- Target to be attacked.
- Combat situation.

For a detailed discussion of ambush formation, see appendix D.

Ambush Operation Terms

The *ambush site* is the location where an ambush is established.

The *killing zone* is that portion of an ambush site where fires are concentrated to trap, isolate, and destroy the target. On little-traveled roads, an obstacle placed in a defile, in the woods, on a bridge or on a steep upgrade can be used effectively to force vehicles to halt, and thus render the occupants vulnerable to attack. Antitank mines may be emplaced and the occupants of the wrecked vehicle killed or captured while still dazed by the explosion.

A *near ambush* is a point ambush where the attacking force is located within reasonable assaulting distance of the killing zone (50 meters is a guide). A near ambush is most often conducted in close terrain, such as a jungle or heavy woods.

A *far ambush* is a point ambush where the attack force is located beyond reasonable assaulting distance of the killing zone (beyond 50 meters is a guide). A far ambush may be more appropriate in open terrain offering good fields of fire or when the target will be attacked by fire only.

Factors for a Successful Ambush Patrol

There are many factors that give the ambush its best chance of success. The ideal situation would be to position the ambush on favorable terrain and have detailed planning completed beforehand.

The patrol leader of an ambush looks for the most favorable terrain in which the enemy is canalized between two obstacles with limited opportunity to attack or escape. Suitable areas include defiles, small clearings, bends in trails, and steep grades. Dense undergrowth adjacent to the ambush site permits observation from concealed positions. The ambush patrol should have maximum cover and concealment, not only for the firing positions, but for the routes of withdrawal. The enemy should be in an area offering as little protection from fire as possible. Favorable fields of fire include stretches of road, trail or open ground of at least 100 meters for machine guns and 15 meters for rifle fire and grenades. The ambush site can be improved by constructing obstacles—such as felled trees, wire, land mines, or booby traps—to impede the enemy.

Planning

A deliberate ambush or an ambush of opportunity requires thorough planning.

A deliberate ambush plan is based on extensive knowledge of the enemy and terrain, and is planned and rehearsed in great detail. A physical reconnaissance of the ambush site is made during the preparation phase and information gained is incorporated into the plan. All likely immediate actions of the enemy when ambushed are examined. Planned counteractions are developed and rehearsed.

In planning an ambush of opportunity, any available information on the enemy and terrain is used. A tentative plan for the ambush that incorporates all anticipated actions is developed and rehearsed. However, the bulk of planning is done concurrently during the patrol leader's reconnaissance of the prospective ambush site. In a rapidly developing situation, hasty ambush immediate action is employed.

The route and ambush site considerations apply to both deliberate ambushes and ambushes of opportunity. A primary route that allows the patrol to enter the ambush site from the rear is planned. Entering the prospective killing zone is avoided. If the killing zone must be entered to place mines or explosives, care is taken to remove any tracks and signs that might alert the enemy and compromise the ambush. If mines or explosives are to be placed on the far side of the ambush site, or if the appearance of the site from the enemy's viewpoint is to be checked, a wide detour is made around the killing zone. Care is taken to remove any tracks that might reveal the ambush. An alternate route from the ambush site to the objective rally point, as in other patrols, is planned.

Maps and aerial photographs are used to carefully analyze the terrain. When possible, an on-the-ground reconnaissance of the ambush site is made prior to occupation. Obvious ambush sites are avoided as the element of surprise is even more difficult to achieve in these areas. An ambush site must provide for—

- Favorable fields of fire.
- Occupation and preparation of concealed positions.
- Canalization of the target into the killing zone. (An ideal killing zone restricts the enemy on all sides, confining him to an area where he can be quickly and completely destroyed. Natural obstacles, such as cliffs, streams, embankments, or steep grades, are used whenever possible to force vehicles to slow down. Man-made obstacles, such as barbed wire, mines, and craters in the roads, are used to supplement natural obstacles.)
- Covered routes of withdrawal that enable the ambush force to break contact.
- Avoidance of enemy pursuit by fire.

Occupation of Ambush Site

The surrounding area is searched for enemy patrols prior to occupation of the ambush site. Ambush formations are used to physically deploy the patrol in a manner to inflict maximum destruction upon the enemy and to provide maximum security to the patrol. Ambush formations are contained in appendix D.

Positions

The patrol is moved into the ambush site from the objective rally point. Security is positioned first to prevent surprise while the ambush is being established. Automatic weapons are then positioned so each can fire along the entire killing zone. If this is not possible, overlapping sectors of fire are provided to cover the entire killing zone. The patrol leader then selects his position, located so he can tell when to initiate the ambush. Riflemen and grenadiers are positioned and sectors of fire are assigned to cover any dead space left by the automatic weapons. The patrol leader sets a time by which positions are to be prepared. Patrol members clear fields of fire and prepare positions in that order, with attention to camouflage for both.

Suitable Objective Rally Point

An easily located objective rally point is selected and made known to all patrol members. The objective rally point is located far enough from the ambush site so that it will not be overrun if the enemy assaults the ambush. Routes of withdrawal to the objective rally point are reconnoitered. Situation permitting, each man walks the route he is to use and picks out checkpoints. When the ambush is to be executed at night, each man must be able to follow his route in the dark. After the ambush has been executed, and the search of the killing zone completed, the patrol is withdrawn quickly but quietly, on signal, to the objective rally point where it reorganizes for the return march. If the ambush was not successful and the patrol is pursued, withdrawal may be by bounds. The last group may arm mines, previously placed along the withdrawal route, to further delay pursuit.

Local Security

Security must be maintained. Security elements do not usually participate in the initial attack, but protect the rear and flanks, and cover the withdrawal.

Patience

The Marines of the ambush force must control themselves so that the ambush is not compromised. Patience and self-discipline are exercised by remaining still and quiet while waiting for the target to appear, particularly if the patrol occupies the ambush site well ahead of the arrival of the enemy. Patience is necessary so as not to alert the enemy to the presence of the ambush.

Surprise

Surprise must be achieved, or the attack is not an ambush. If complete surprise cannot be achieved, it must be so nearly complete that the target is not aware of the ambush until too late for effective reaction. Surprise is achieved by careful planning, preparation, and execution so that targets are attacked when, where, and in a way for which they are least prepared.

Coordinated Fires

Properly timed and delivered fires contribute heavily to the achievement of surprise, as well as to destruction of the enemy. The lifting or shifting of fires must be equally precise; otherwise, the assault is delayed and the enemy has an opportunity to recover and react. All weapons, mines, and demolitions are positioned and all fires, including those of available artillery and mortars, are coordinated to achieve the following results:

- Isolation of the killing zone to prevent the enemy's escape or reinforcement.
- Surprise delivery of a large volume of highly concentrated fires into the killing zone.

Control

Close control of the patrol is maintained during movement to, occupation of, and withdrawal from the ambush site. This is best achieved through rehearsals and establishment and maintenance of good communications. When the enemy approaches, the temptation to open fire before the signal is given is resisted. The patrol leader must effectively control all elements of the ambush force. Control is most critical at the time the enemy approaches the killing zone. Control measures must provide for—

- Early warning of enemy approach.
- Fire control. Withhold fire until the enemy has moved into the killing zone, then open fire at the proper time.
- Initiation of appropriate action, if the ambush is prematurely detected. Individual patrol members must be prepared to react if detected by the enemy prior to the initiation of the ambush.
- Timely and orderly withdrawal of the ambush force from the ambush site and movement to the objective rally point.

It is important to remember that an ambush patrol should have four distinct signals: one to open fire (with an alternate signal to open fire to be used at the same time as the primary); a signal to cease fire or shift fire; a signal to assault or search the killing zone; and a signal to withdraw. The signal to open fire should meet two criteria: first, it should be the firing of a weapon that will kill the enemy; secondly, it should be a weapon reliable in any weather condition. A good primary signal is a Claymore mine, and an alternate signal would be a closed bolt weapon (M16A2). Open bolt weapons (M240G, M249) should not be relied upon to initiate an ambush.

Execution of an Ambush

The manner in which the patrol executes an ambush depends primarily on whether the ambush's purpose is

harassment or destruction. To a lesser degree, the execution of the ambush is determined by whether the ambush is deliberate or an ambush of opportunity.

When the primary purpose is harassment, the patrol seals off the area with security teams to prevent enemy reinforcement and escape. Maximum damage is inflicted with demolitions and automatic weapons fire. The patrol delivers a very heavy volume of fire for a short time and withdraws quickly and quietly. The patrol avoids being seen by the enemy.

When the primary purpose of the patrol is destruction, the area is sealed off with security units. Maximum damage is inflicted with demolitions, antitank weapons, and automatic weapons fire from the support team or element. When these fires cease or shift, an assault is launched into the killing zone with heavy fire and violence to complete destruction. The assault unit provides security, while designated teams search and/or capture personnel and destroy vehicles and equipment. On the patrol leader's command, or by prearranged signal, all units withdraw to the objective rally point and move out quickly.

When the patrol's primary purpose is to obtain supplies or capture equipment, security units seal off the area. Demolitions and weapons are used to disable vehicles. The assault unit must use care to ensure its fire does not damage the desired supplies or equipment. Designated teams secure the desired items; other teams then destroy enemy vehicles and equipment.

The most successful ambush is one where the attacker is deployed and concealed in such a way that the enemy will unknowingly be surrounded by fire. The usual method is for the attackers to deploy themselves along a trail or route the enemy will travel. The enemy is permitted to pass by the center of the attacker's force so that the attack can be made from the front, flank, and/or rear. One or two men are posted well forward and to the rear along the route to prevent any enemy from escaping. All fires should be delivered simultaneously on a prearranged signal.

An effective method of luring the enemy is for an ambushing patrol to cut communication or electrical wire. The patrol then deploys and ambushes the line repair crew when it arrives. Since the line crew may be protected by riflemen, the attackers must be careful to engage the entire party.

Vehicles and foot personnel moving on well-established transportation routes can sometimes be captured by altering or moving directional signs so as to divert the enemy into an area where he can be more readily attacked. The attack can best be accomplished at an obstacle, such as a stream or gully, that forces the enemy to stop or slow down.

After the enemy has been ambushed and destroyed, the unit quickly withdraws over a prearranged route to the objective rally point. Speed is very important, since the noise of the ambush could alert other nearby enemy units.

13006. SECURITY PATROLS

General

Security patrols are assigned missions that may or may not require them to engage the enemy. They are used in proximity to defensive positions, on the flanks of advancing units or in rear areas. Purposes of security patrols are to detect infiltration by the enemy, destroy infiltrators, and protect against surprise and ambush.

In any situation where there is a threat of attack, such as a rear area threatened by guerrillas or a facility that is under threat of a terrorist attack, all Marines, not just the infantry, must know how to conduct a security patrol.

In just the offensive operations, infantry units provide security patrols to screen their flanks, areas, and routes. Whereas, in defensive operations, security patrols are used to prevent the enemy from infiltrating an area, detect and destroy infiltrators, and prevent surprise attacks. In rear areas, particularly when there is guerrilla or terrorist threat, the requirement to conduct security patrols increases for all Marine air-ground task force (MAGTF) units ashore, particularly aviation and combat service support units.

Task Organization and Equipment

Generally, a Marine rifle squad or similar sized organization is considered ideal for security patrols. Communications are important to higher headquarters so that they receive information from the patrol; and communications are important to the patrol to request fire support, etc. The radio the patrol carries must have the range necessary for higher headquarters to be able to receive transmissions from anywhere along the

patrol route, and the patrol must have a secondary means of reporting (i.e., flare signals upon contact).

Patrol Procedures

All of the procedures presented in previous sections are to be used in security patrols.

Patrol Planning

Security patrol planning includes—

- Rehearsing prior to departing friendly lines.
- Maintaining communications.
- Support by organic weapons.
- Reinforced if necessary.
- Using varied routes and never establishing a routine pattern.
- Staying within proximity of friendly units.

Patrol Techniques

Within rear areas, an irregular pattern of patrol is established and changed daily. Outside of friendly lines it would be prudent to establish a definite preplanned route for the patrol, of which all adjacent units know the route. The parent unit commander establishes frequent checkpoints for control. If checkpoints are designated, the patrol leader treats them as individual objectives to be searched and cleared.

The patrol has a definite plan as to what to do if contact with enemy is made, how to break contact, how to defend itself, and how to call for supporting fires. It is imperative that patrol members know what to do if they become split or separated; i.e., location of rally points and how to be recovered.

13007. URBAN PATROLS

General

As national strategy continues to focus on regional vice global conflicts, the Marine Corps will continue to conduct urban operations in various operational environments. Cities and towns are often the center of economic and political power and are therefore extremely vulnerable to urban insurgent activities and violence. The lessons learned from recent operations in Somalia, as well as experiences gained by British forces in Northern Ireland, provide the foundations of urban patrolling.

Enemy Forces

Enemy forces in urbanized areas range from organized military forces to low intensity engagements with insurgents, such as terrorists or local gangs. For Marine Corps doctrine and tactics, techniques, and procedures (TTP) for dealing with the higher intensity threat in urbanized areas, refer to MCWP 3-35.3, *Military Operations on Urbanized Terrain.*

Common Threat Tactics

Cities provide cover and concealment for both friendly forces and enemy forces. However, enemy forces generally find active support only in certain areas of the town or city. The urban-based insurgent or terrorist usually lives in a friendly community or in one where the people are too frightened to withhold support or inform anyone about the situation. The insurgent or terrorist normally maintains close contact with leaders and others friendly to the cause. The enemy will often have efficient communication and intelligence systems, sometimes involving women and children to provide cover for its activities.

The urban insurgent normally cannot, like his rural counterpart, establish bases and recruit large military units. He is generally an individual or a member of a relatively small group. He relies on the cover afforded by the city's populace and terrorizing them to coerce loyalty or support.

Urbanized areas tend to give the insurgent and/or terrorist many opportunities to initiate action and gain advantage. The normal presence of large numbers of people in cities provides the foe an opportunity to mass crowds quickly and manipulate demonstrations easily. The presence of women and children during mass demonstrations may restrict the courses of action available to friendly forces. Major incidents stemming from overreaction or excessive use of force by friendly forces may provide the insurgent with propaganda material. Publicity is easily gained in an urbanized area because major incidents can't be completely concealed from the local population. Insurgent successes can be exploited to discredit the ability of host nation police, friendly forces, and the civil government, and gain recognition for the insurgents' cause.

The urban insurgent or terrorist can usually be expected to operate more boldly than his rural counterpart. This is reflected in the enemy's tactics. A single

sniper or bomber may be the norm in the urbanized area, whereas the rural threat is generally the more conventional ambush. In urbanized areas, explosive devices can be easily emplaced and used effectively against large groups or select individuals. Enemy forces may be expected to employ the following tactics in urbanized areas:

- Using local communications, such as radio and newspapers, for propaganda purposes.
- Disrupting industry and public services through strikes and sabotage.
- Generating widespread disturbances designed to stretch the resources of the security force.
- Creating incidents or massing crowds in order to lure the patrol or reaction force into a trap.
- Provoking security forces in the hope that they may react improperly, therefore discrediting the security force by means of propaganda.
- Sniping at roadblocks, outposts, sentries, and patrols.
- Attacking friendly bases with rockets and mortars.
- Planting explosive devices, either against specific targets or indiscriminately, to cause confusion and destruction, and lower public morale and confidence.
- Using ambush patrols.
- Firing on friendly helicopters.

Principles of Urban Patrolling

Patrolling in an urban environment often presents conditions considerably different and often more complex than those encountered in rural and less inhabited areas. While the principles of patrolling are still relevant in an urban situation, the nature of urban patrolling has led to the development of six specific urban patrolling principles. They are—

1. **Depth.** The restrictive, canalizing nature of urbanized terrain usually limits a patrol's ability to disperse laterally. To prevent the patrol from bunching up, patrols normally maintain dispersion along the length of a patrol formation.

2. **Mutual Support.** The positioning of units in-depth within the patrol enables one unit to cover another unit's movement and facilitates immediate action during various situations. Aircraft, vehicles, and snipers also provide good mutual support.

3. **Deception and Pattern Avoidance.** Deception and pattern avoidance are normally a planning consideration of the headquarters directing the entire patrolling plan. By varying patrol routes, durations, and departure times, hostile actions commonly used against urban patrols—such as enemy ambushes, and roadblocks—are more difficult to plan and may be preempted.

4. **Intra-patrol Communication.** Elements of an urban patrol must have the means to communicate with each other. Ideally, each element will possess a radio enabling it to remain in continuous communication that facilitates rapid response and reporting to higher headquarters, reaction force coordination, and coordination of actions with other patrols or fire support agencies.

5. **Establishment of a Reaction Force.** The nature of urbanized terrain (its compartmentalization) makes urban patrols more vulnerable to a wider range of hostile actions. The requirement for immediate, coordinated reinforcement of a patrol is best satisfied by employment of an established reaction force. The reaction force requires superior mobility (relative to the enemy's) and fire support to be effective for this task.

6. **Three-Dimensional Threat**. Patrolling in an urban environment requires constant attention to its three-dimensional aspect; hostile actions can originate from rooftops, streets, subsurface levels or combinations of all levels at once.

Classification of Urban Patrols

Mission

The vast majority of urban patrols are overt in nature, with their presence readily apparent to the local populace. Most urban patrols are combat vice reconnaissance patrols. The vast majority of urban patrols are security patrols. However, units may be assigned secondary tasks of reconnoitering specific or general areas along the patrol routes.

Raids normally involve a swift penetration of an objective to secure information, confuse the enemy or destroy installations. Raids include a planned withdrawal upon completion of the assigned mission.

Movement

Means of movement are as follows:

- Dismounted: movement on foot.
- Vehicular: movement by motorized, mechanized or armored vehicle.
- Helicopterborne: movement by helicopter, however, helicopterborne patrols will usually involve dismounted or vehicular movement after patrol insertion.
- Combination: movement using a combination of methods.

Task-Organization

Units task-organize to meet the specific requirements of the mission and situation. The Marine rifle squad is ideally suited for urban patrolling and can easily integrate attached specialists required by specific missions. Specialists who may accompany urban patrols include—

- Interrogator-translator team (ITT) and counterintelligence team (CIT) Marines.
- Explosive ordnance disposal (EOD) personnel.
- Members of host nation or allied military forces.
- Interpreters.
- Local community leaders.
- Local law enforcement officers.
- Public affairs personnel escorting media representatives.

Dismounted Patrol Organization

Patrols should maintain unit integrity (fire team and/or squad) in organizing elements for an urban patrol. Similar to reconnaissance patrols, the vulnerability of urban patrols necessitates that all elements must provide for their own security in addition to the combat aspect of the mission. Combined assault and security teams are an effective method to organize for all-around security.

Urban Patrol Base Operations

Urban patrols may operate from an established patrol base that may be located within the unit's assigned area of operations or an area designated for a patrol. The patrol base should be located in a building used exclusively for this purpose. Patrol bases may also be located within a larger site that houses other agencies, such as a higher headquarters' command echelon.

If located within a larger site, the patrol base will be included in the overall facility security plan. If isolated, the patrol base must consider the following security factors:

- External security:
  - Barrier plan.
  - Sentry posts.
  - Local security patrols.
- Internal security:
  - Covered positions for all Marines.
  - Contingency plan for hostile actions against patrol base.

The Reaction Force

The high probability of an urban patrol becoming involved in a hostile or volatile incident requires the establishment of a dedicated reaction force for rapid reinforcement, support or extraction of the patrol. Ideally, the reaction force is—

- Large enough and task-organized in a manner that it can meet and quickly defeat the expected threat. Reaction forces are normally tiered with a lead element (normally one-third of the unit's size) and a main body force (the other remaining two-thirds of the force). Reaction force response times routinely are determined in advance by higher headquarters.
- Ready to respond immediately.
- Motorized or mechanized and supported by close air support and other fire support.
- Familiar with the area of operations.
- Briefed on the patrol's plans and monitors the status of patrols in progress.
- Task-organized to be multimission capable.
- Able to communicate with the higher headquarters, fire support assets, patrol base, and the patrol.
- Controlled by higher headquarters, once employed.

Patrol Preparation

Planning

Higher headquarters will—

- Designate the area for patrol.
- Provide intelligence briefs and updates.
- Ensure liaison with allied forces and the civilian populace.
- Provide special equipment and personnel required for the mission (scout snipers, public affairs officer, interpreters, etc.)
- Provide urban maps, photos, terrain models as required.
- Consider deception and pattern avoidance when issuing mission.
- Prescribe rules of engagement (ROE).

Intelligence Brief

An intelligence brief is conducted by the S-2 officer or representative prior to a patrol conducting its mission. The brief adresses the situation relevant to the specific patrol (e.g., routes, areas, updated enemy situations).

Coordination

Higher headquarters will effect liaison with adjacent and allied forces, as well as civil authorities and other agencies, having a possible effect on the patrol. The patrolling unit generally follows the same procedures as those used during patrol planning and execution in a jungle or forest environment.

The Urban Patrol Order or Warning Order

The Urban Patrol or Warning Orders use the same format and considerations as noted in this publication for patrolling. They rely heavily on a detailed terrain model, photographs, and subterranean construction to ensure complete understanding of the plan.

Rehearsals

The limited size of the patrol base usually precludes the need for full-scale rehearsals. Immediate action drills, such as crossing danger areas, are rehearsed in as much detail as possible, despite the limited available space.

Inspections

Initial and final inspections are conducted in the same manner as other patrols. Attached personnel must be fully integrated into the patrol and familiar with the plan and unit standing operating procedures (SOPs).

Conducting an Urban Patrol

Movement

Individual and unit movement considerations are generally the same as those for other patrols. However, urban environments require consideration of additional factors. Because of these factors, an urban patrol leader should—

- Ensure that each movement within a patrol takes place under the observation or cover of another individual or element of the patrol.
- Know where cover can be taken in the event of a hostile incident or action.
- Be prepared for contact with civilians, especially children, during the patrol and be aware that they may intentionally attempt to distract patrol members.
- Expect the presence of vehicles (both moving and stationary) along the patrol route.
- Expect members of the patrol to be approached by dogs and what action to take if threatened.

Patrol Formations

Squad-sized Patrols. The need for immediate fire power outweighs the dangers of becoming canalized. In contrast to other types of patrols, the headquarters element of an urban patrol will normally locate at the lead of the patrol column. This allows the patrol leader greater flexibility through control of two combined assault and security (A&S) teams. The leaders of these elements tactically stagger their members on each side of the road (see fig. 13-1 on page 13-12).

A&S teams follow in trace of the headquarters element and maintain unit integrity on separate sides of the street. One unit will remain slightly to the rear to create a staggered interval between Marines on either side of the street. This allows A&S teams to take lateral routes in support of headquarters element without having to cross a street to do so.

Platoon-sized Patrols. Squads will generally travel abreast of each other, moving along parallel routes. The interval between squad-sized units and/or teams is situation-dependent, but is usually between 100 and 150 meters (roughly two city blocks; this often prevents visual contact between the units). The intent is to create less of a target to an aggressor, yet still allow the patrol to quickly react to an incident. Individuals within units or teams will move in a staggered column as in a squad-sized patrol. See figure 13-2, which is located on page 13-13).

Night

Night patrols will generally be at least squad-sized and will generally use the same formation as that for day patrols. At night, it may be necessary to close distances between individuals or elements to maintain control. Consideration should be given to the use of night vision devices and thermal weapons sights.

Navigation, Control, and Security Measures

The patrol leader is ultimately responsible for the navigation. The headquarters element normally functions as the base unit during movement. The designated navigator is normally assigned from within the headquarters element. City maps are often inaccurate or outdated; however, when used with aerial photographs and other navigational aids, they can be effective for urban navigation.

Checkpoints and phase lines should be related to major streets (alleys, buildings, bridges) for easy identification. Arrival at checkpoints and crossing of phase

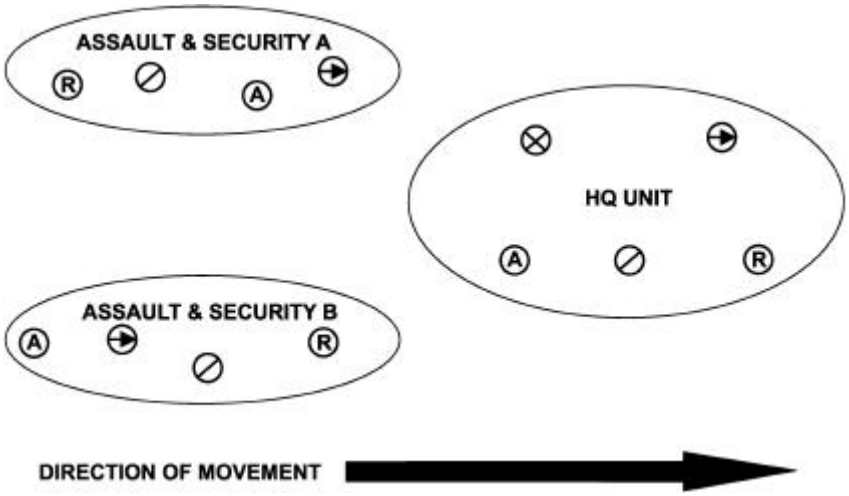

Figure 13-1. Squad-sized Dismounted Urban Patrol Formation.

lines should be relayed to higher headquarters using established brevity or codewords. A detailed patrol overlay is issued to both the reaction force and higher headquarters to keep them advised of routes and control measures used. A terrain model should be maintained at higher headquarters to aid in supervision and control of the patrol.

The use of camouflage should be limited to avoid frightening and confusing the local populace. The often overt nature of urban patrols may negate the need for camouflage. Patrols are sometimes deployed to show force presence and usually move on the urban street in plain view.

During daylight, patrols will routinely vary their rate of movement ranging from short halts to brief periods of double-timing. The British term for this urban patrolling technique is *hard-targeting*, meaning it makes the patrol harder for an enemy to target. Altering the rate of movement is intended to frustrate the enemy's ability to coordinate an attack or ambush against a targeted patrol.

Patrols should use short security halts, with Marines taking up mutually supporting firing positions. Marines must always work in pairs, ensuring mutual support. The last Marine in the element will provide rear security, but stays in his buddy's sight.

Individual Tasks

Individuals may be assigned collateral tasks performed throughout the patrol that may increase the patrol's situational awareness. Individual tasks may include—

- Vehicle spotter: looks for suspicious or known insurgent vehicles.
- Personnel spotter: observes and attempts to recognize previously identified enemy in crowds.
- Talker: attempts to gain information from casual conversations with the local populace. (Talkers are usually subordinate leaders or Marines with foreign language skills.)
- Searcher: conducts physical searches of vehicles and personnel while other patrol members provide cover and security.
- Marksman: engages point targets when the tactical situation does not permit massed or high volume fire. Other patrol members provide security to cover the marksman's engagement.

Departure of Friendly Lines

Urban patrols must vary their departure times to prevent being ambushed while exiting the patrol base.

Individual elements will usually depart exits at staggered times and at different movement rates, especially where sentries cannot provide cover. (This technique is used when the environment adjacent to the patrol base is dangerous.)

Once an element has exited friendly lines, a short halt is conducted in a predetermined, covered initial rally point 50 to 100 meters from the base. This ensures all elements are in position before the patrol continues.

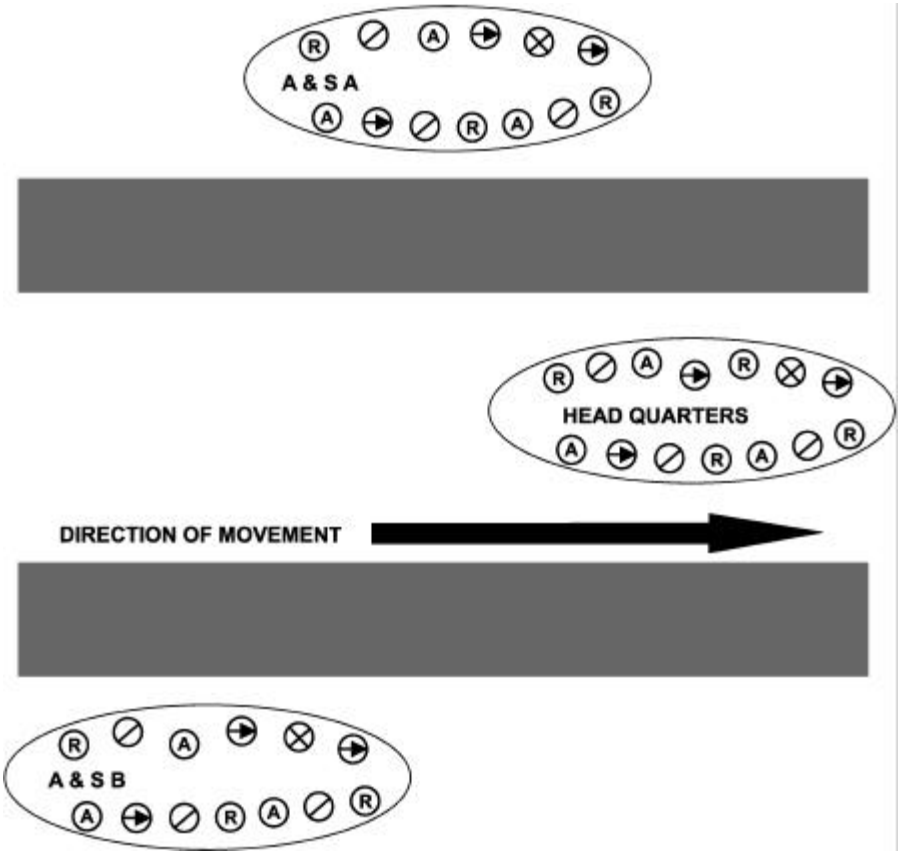

Figure 13-2. Platoon-sized Dismounted Urban Patrol Formations.

Exit points, routes from the base, departure techniques, and locations of IRPs should be varied constantly to avoid setting a pattern. This pattern avoidance may also include using vehicles to insert patrols away from the urban patrol base and employing empty vehicles as part of a deception plan.

Danger Areas

Urban patrols may encounter hundreds of danger areas during a single patrol. The three-dimensional threat requires keen situation awareness by every patrol member. Many danger areas can be dealt with simply by avoidance, while others require an adjustment of patrol formation, movement rate, etc. In the urban environment, places to be treated as danger areas are points that pose a major threat to the patrol, such as local political and religious headquarters, weapons containment areas, roads and routes that canalize movement and direct fire, and any area with a history of repeated contact.

Near and far side rally points are designated and briefed during the issuance of the patrol order. Squad-sized formations may use the A&S teams to provide flank security for the headquarters element and for each other. The headquarters element identifies the danger area and takes up a position on the near side of intersection. Individuals provide all-around security (see fig. 13-3 on page 13-14).

Two Marines (one from each A&S team) are designated to move through the headquarters element and establish respective firing positions on the near side of the danger area covering the patrol's near side flanks. They are followed by a second pair (again, one Marine from each A&S team) that moves across to the far side of the danger area and establishes respective firing positions covering the patrol's far side flanks (see fig. 13-4 on page 13-14).

Once near and far side flank security is established, the headquarters element moves across to the far side of danger area (see fig. 13-5 on page 13-15).

The remaining A&S team members then cross the danger area and join the headquarters element on the far side (see fig. 13-6 on page 13-15).

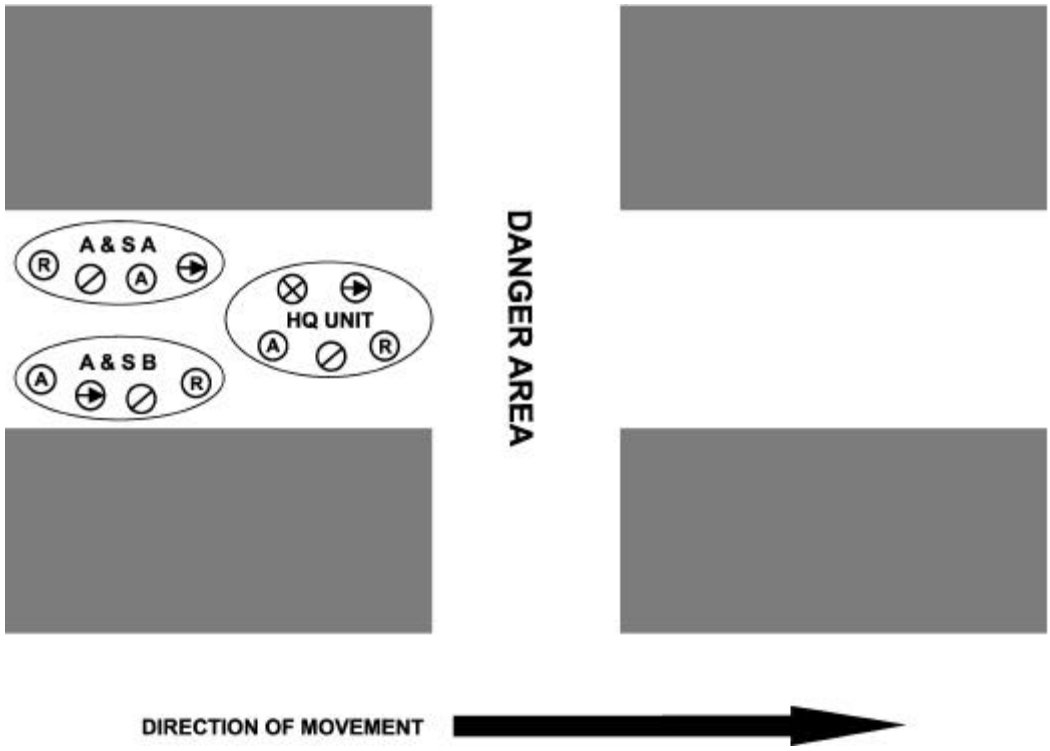

Figure 13-3. Approaching Danger Area.

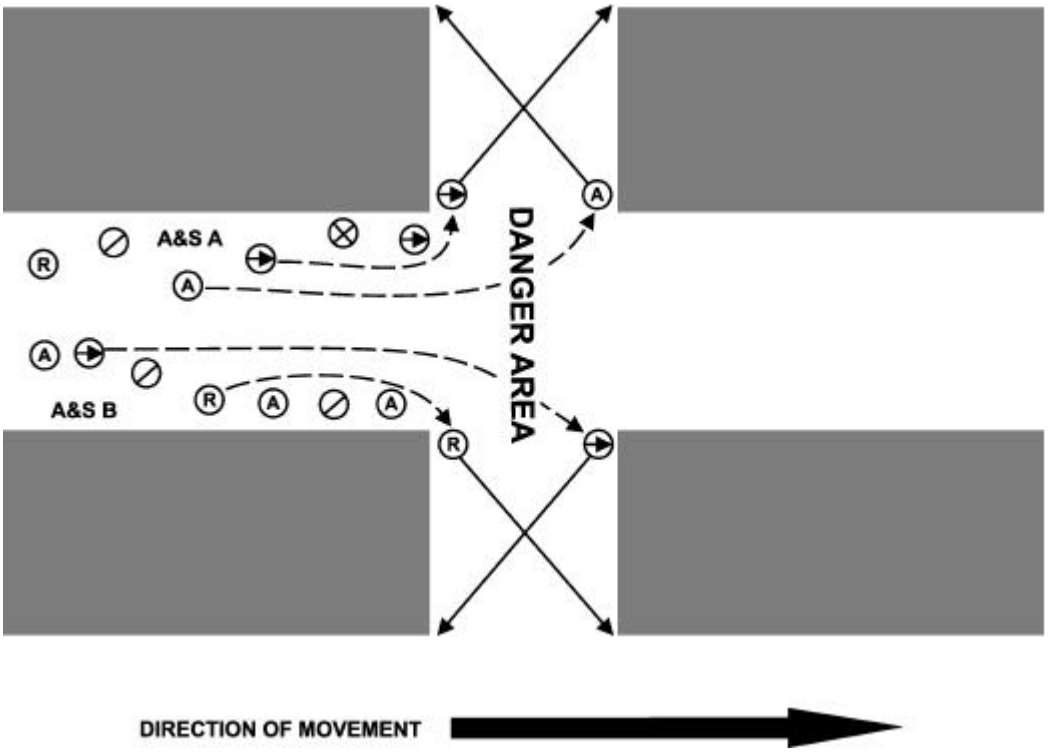

Figure 13-4. Securing Flanks.

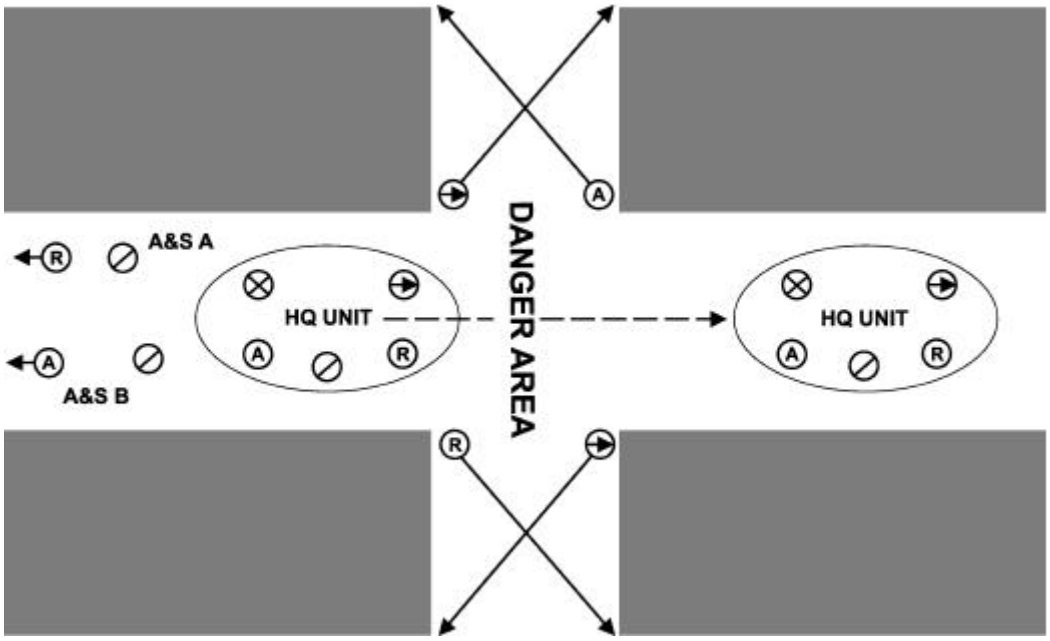

Figure 13-5. HQ Element Moves Through.

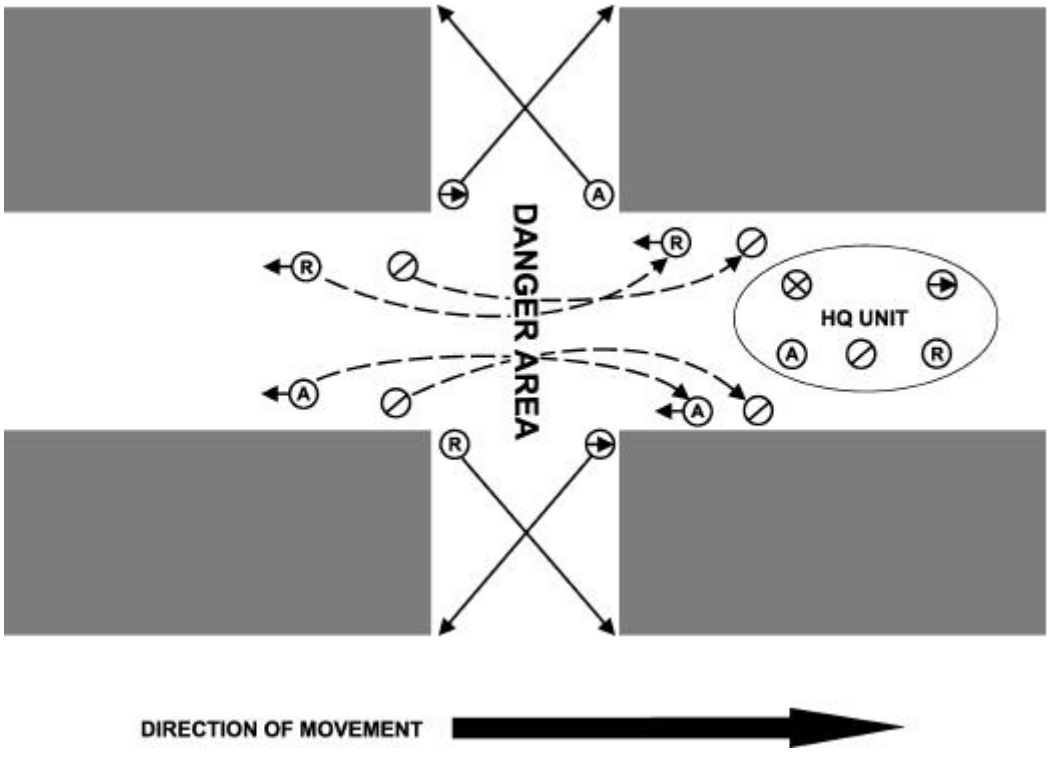

Figure 13-6. A&S Elements Move Through.

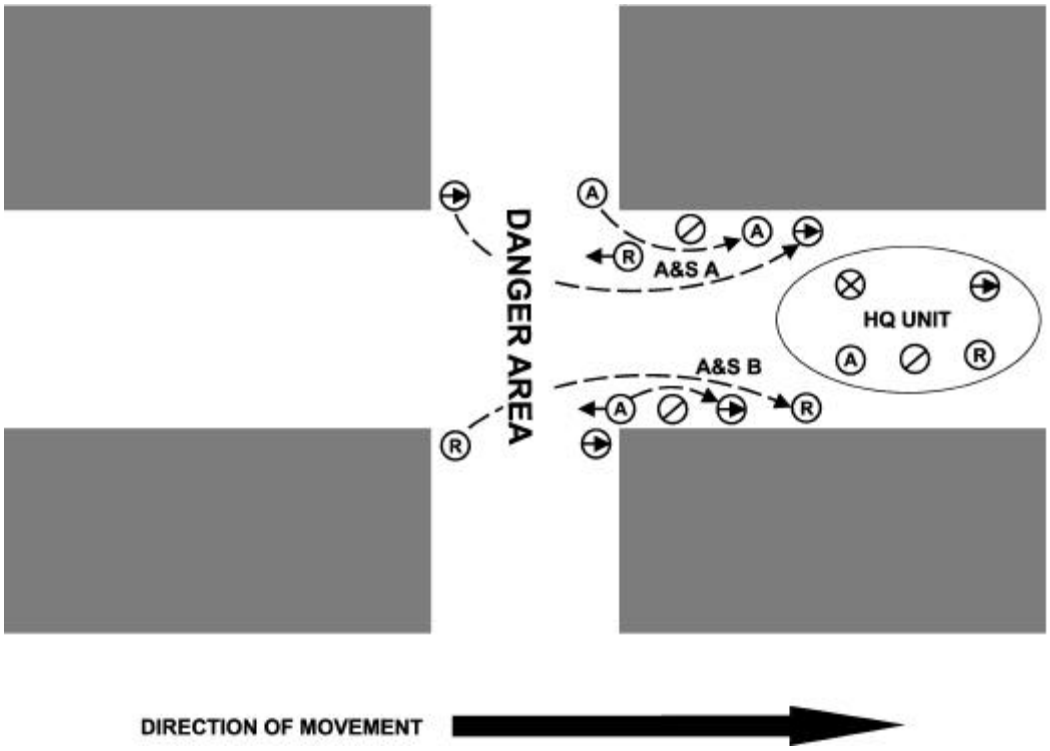

Figure 13-7. Patrol Resumes Movement Along Intended Route.

Once the trail A&S team members cross the danger area, they take up rear security and cover the movements of the near and far side flank security teams as they return to their positions in the patrol formation. The near side security team should collapse back first, followed by their far side counterparts. The patrol then resumes its advance away from the danger area (see fig. 13-7).

Interaction with Local Populace

Urban patrols must interact with the local populace. Patrols are at first a novelty to the civilians but can quickly become an unwelcome intrusion. The movement of the patrol must be fast enough to prevent the enemy from massing their fires upon it, but deliberate enough to ensure adequate security and mutual support. Patrol members must realize that they are usually the only Marines the local populace will encounter and that an inappropriate gesture, comment or act could lead to the deterioration of rapport between U.S. forces and the general population. Marines must remember that the vast majority of the individuals with whom they come in contact will be noncombatants attempting to survive in trying political, economic, and social situations.

Hostile incidents often seem to occur spontaneously, but there are usually indications that can alert Marines to imminent danger. The most obvious are the sudden alteration of normal routines, patterns, and attitudes of the local populace or other unusual activity. Some examples include—

- Observers on rooftops, in windows, etc., who are obviously tracking the patrol.
- The unusual absence of pedestrian traffic and people on porches.
- Stores, markets or street vendors closed suddenly or without explanation.
- Changes in civilian attitude toward patrol members.
- Unknown individuals or vehicles in the patrol area.
- Unfamiliar vehicles parked in the patrol area (possible car bomb).
- Roadblocks.
- Children throwing rocks at patrols to possibly draw the patrol's attention away from a more serious danger, such as a deliberate ambush.
- Vehicles riding unusually low due to overloading (possibly ferrying people, weapons, explosives).
- Agitators trying to provoke an incident with patrol members.

- Absence of the usual stray dogs (dogs are adept at sensing danger and avoiding it).
- Anti-American graffiti suddenly appearing in the patrol area.
- Pictures of enemy leaders and martyrs posted in the patrol area.
- Civilian workers failing to appear at U.S. or friendly bases.
- Normal deliveries and pick-ups conducted late or early without reason.
- Sudden change of civilian sentiment in newspaper articles, radio broadcasts or other media.
- Women and children leaving to live elsewhere.

Immediate Actions Upon Enemy Contact

Reaction to Sniping

Snipings are often executed from a single firing point, but coordinated snipings delievered from multiple points are not uncommon.

Patrol element or team leaders should constantly try to identify likely firing points and anticipate their own reactions to a possible shooting. Normally, snipers in an urban environment have a detailed withdrawal plan. Once a patrol comes into contact with a sniper, the patrol leader must immediately assess the situation and maneuver his patrol accordingly. The patrol's mission, location, size, ROE, and location of the threat often determine whether the patrol will attempt to neutralize the targeted sniper. If the patrol leader decides to kill or capture the sniper, he uses planned and rehearsed immediate actions to maneuver and counter the sniper's assault. The goal is to kill the sniper or cut off his escape and capture him. There are three immediate reactions to neutralizing a sniper: initial contact, immediate follow-up, and subsequent follow-up.

Initial Contact. The initial contact is made when the sniper fires the first shot. The patrol must react immediately and positively to get behind the firing position in order to kill or capture the gunman. The period of contact ends when the gunman is killed or captured, or the patrol element or team leader on the scene ends it. The following technique is the same for both squad- and platoon-sized patrols:

- The element or team in contact attempts to identify the firing position and maneuvers designated marksman into position to return well-aimed and controlled fire. Other members of the patrol take up positions to cover the marksman's engagement.
- The patrol element or team leader in contact sends initial contact report to the patrol leader, who notifies higher headquarters.
- The element or team leader in contact determines appropriate cut-off positions and relays them to flanking elements or teams.
- The patrol element or team leader in contact continues to observe the firing point, but does not enter it due to the possibility of booby traps. Flank elements or teams set up along likely escape routes.
- The incident ends when either the sniper ceases fire or is neutralized.

Immediate Follow-Up. Regardless of the fate of the gunman, isolation of the firing point is necessary to prevent reinforcement and preserve forensic evidence (scent, spent casings, etc.). If not under fire, members of the patrol element or team cordon off the area surrounding the firing point. Flanking elements or teams maintain their positions and prevent civilians from entering the area. The patrol leader moves to link-up with the element or team in contact (if not his own), and makes an estimate of the situation. The patrol leader sends a SPOTREP to higher headquarters.

Subsequent Follow-Up. The aim of the subsequent follow-up is to use follow-on forces to clear the building of remaining resistance or to obtain evidence that can be used to capture the gunman. The patrol leader establishes a position where he can brief arriving units (reaction force commander, S-2 representative, EOD personnel, etc.). Once the arriving units have been briefed, recommendations are made to higher headquarters via radio. No one is allowed into the cordon without the patrol leader's approval.

Reaction to Becoming Decisively Engaged

If a patrol becomes decisively engaged from numerous firing positions, the following immediate action should be taken:

- All patrol members move to available cover and return accurate fire on identified firing points.
- The patrol leader assesses the situation and makes a decision to either request the reaction force or break contact.
- If the reaction force is requested, the patrol will maintain its position until the reaction force arrives. The patrol should use fire and maneuver to gain better tactical positioning and support the arrival of the reaction force. When the reaction force arrives,

its commander may decide to either clear occupied buildings or cover the patrol during its extract.

Reaction to Bomb Threat or Discovery

The use of command-detonated explosive devices is a common ambush tactic employed by a terrorist or insurgent in an urban environment. The appropriate response to a reported threat or an actual discovery is generally involves four steps (known as the four Cs)—

1. The patrol leader **CONFIRMS** the presence of the suspicious item.

2. Without touching or moving anything suspicious, patrol elements or teams **CLEAR** the immediate danger area to a minimum of 100 meters. The area is cleared from the suspected device outward, inform civilians as to the reason for evacuation.

3. A&S teams establish a **CORDON** to secure the cleared area. Avenues of approach are cordoned off to keep people out and to protect EOD or engineer personnel clearing the device. The assistant patrol leader acts as the cordon commander and informs the patrol leader when the cordon is secure. An effective cordon technique is to tape off the area with engineer tape, creating both a physical and psychological boundary.

4. **CONTROL** of the area is maintained throughout the bomb clearing operation by the patrol leader. The patrol leader sends a report to a superior concerning details of the device (if known) and the area affected. The patrol leader coordinates with arriving personnel (EOD, engineers, etc.). The patrol leader maintains communication with the assistant patrol leader and keeps the Marines informed of the progress of the clearing operation.

Reaction to a Bomb Detonation

Bombs may be used by an insurgent as a means of initiating an ambush on mounted or dismounted patrols, in which case the actions for decisive engagement apply. Immediate action in response to an isolated explosion is similar to that used in reaction to a sniping and breaks down into the same three phases:

Initial Contact. The patrol leader attempts to identify the likely initiation point and sends an initial contact report to higher headquarters. If the bomb was command-detonated, the patrol leader sends his A&S teams deep to cut off the bombers' escape routes. Any casualties are moved a minimum of 100 meters from explosion and out of the line of sight to it.

Immediate Follow-Up. The A&S teams may need to maneuver to positions behind the likely initiation point to cut off escape. Once in position, personnel checks are conducted and any suspects are detained. The patrol leader coordinates requests for required support (MEDEVAC, reaction force, etc.)

Subsequent Follow-Up. Due to the possibility of secondary detonations, the four Cs (confirm, clear, cordon, and control) can be conducted as in reaction to a bomb discovery or bomb threat.

Civil Disturbances

Urban patrols must prepare to react to spontaneous aggression by the local populace. In many cases, civil disturbances are organized by the enemy to draw dismounted patrols into a targeted area, or to distract them from enemy activity occurring elsewhere. Civil disturbances are generally divided into two categories: minor aggressive actions, and full-scale rioting.

Minor aggressive actions are activities characterized by rock-throwing or use of devices such as Molotov cocktails and may either be directed at the patrol or take place between different ethnic factions of the population. Minor aggressive actions are normally spontaneous in nature and may have minimal or limited objectives for the insurgents.

Full-scale rioting events are usually in response to another major event or incident that may enflame the populace. Full-scale riots are well-planned and orchestrated, with clear objectives or targets in mind. At times, patrols will need to attempt to maintain control of a civil disturbance situation; however, dismounted and mobile small unit patrols should generally avoid potential flashpoints. Procedures to handle civil disturbances are as follows:

- The patrol leader reports the incident to headquarters and attempts to diffuse the crowd by talking to crowd leaders.
- If the patrol leader determines the size of the disturbance is too large for the force to handle, the patrol should move away from the disturbance to a safer, more remote covered area and occupy positions to observe and report the situation to higher headquarters. To prevent the patrol from being pursued by the crowd, the patrol should move quickly and change direction, often at road junctions, to gain distance from it.

Patrol members should maintain dispersion to create a more difficult target. They should face the crowd at all times to see and avoid any projectiles thrown. Individual self-discipline must be maintained throughout the

disturbance. Marines charging into the crowd or throwing objects back at the crowd will only worsen the situation. If pursued or trapped, the patrol leader may consider using riot control agents (combat support, pepper gas, etc.) to disperse or slow a crowd's movement. The use of riot control agents must be authorized under the established ROE. If the patrol leader believes the situation is deteriorating beyond the patrol's ability to control it, the patrol leader should request the reaction force, which may be better equipped to handle a large riot or mob.

Break Contact

As with patrols in rural areas, the patrol leader may be forced to break contact as a result of decisive engagement with the enemy. On the basis of his estimate of the situation, the patrol leader will normally break contact in one of the following ways:

- As a patrol, with elements providing cover for movement as defined by clock direction and distance.
- As individual units/teams taking separate routes out of the area, then linking up at a designated rally point a safe distance away from the engagement.

As in any contact with enemy forces, smoke may be employed to screen movement. Fire support agencies can be utilized to suppress targets; riot control agents can be employed to disrupt enemy movement.

Reentry of Friendly Lines

The reentry of a dismounted patrol into an urban patrol base is no different from that of a patrol conducted in a rural area. The same planning considerations and control methods apply.

Missions Related to Urban Patrolling

House Calls

House calls missions are usually part of a coordinated effort to collect information within the area of operations. They involve obtaining up-to-date information on particular houses and occupants. When possible, local police should accompany patrols to do the actual talking to the occupants. If this is not possible, a technique that may be used by an urban patrol is—

- A&S elements move to provide cover around the target house.
- The headquarters element provides security just outside the house.
- The patrol leader and one Marine for security enter the house, if invited. If not invited, they talk to the occupants on the doorstep. Patience and tact are required in requesting information. An interpreter should be present when language differences exist.

Vehicle Checkpoints

Urban terrorists or insurgents commonly use vehicles to transport personnel, weapons, explosives, and equipment. Civilian vehicles are often used for these purposes, creating the requirement to check as many vehicles as possible. While permanent, fortified checkpoints may be conducted along approaches into an urbanized area, dismounted patrols can be employed to establish hasty vehicle checkpoints to stop vehicles and to keep the enemy off-guard. The two common types of vehicle checkpoints patrols establish are hasty and deliberate.

*Hasty checkpoint*s are deployed anywhere based upon the decision of the patrol leader. Patrols must not set patterns through the frequent use of the same sites.

Deliberate checkpoints are tasked by higher headquarters to achieve a specific purpose. Time and locations are carefully considered to avoid setting patterns.

The general layout for a squad-sized, two-way dismounted checkpoint is depicted in figure 13-8 on page 13-20. The technique is as follows:

- The A&S teams are positioned stealthily in blocking positions on both sides of the road.
- Both the patrol leader and assistant patrol leader act as "talkers" for each direction of traffic (with local police or interrogator or translator Marines acting as interpreters) while a two-man team from the headquarters element physically searches the vehicles.
- Obstacles or parked vehicles may be employed to create a staggered roadblock in center of the checkpoint to slow approaching vehicles.
- The checkpoint location should be sited so that approaching vehicles cannot see it until they have passed a security team, and they have no escape route then available.
- Signs announcing the checkpoint should be displayed a safe distance from the search area for safety to both drivers and Marines.
- Normally higher headquarters will issue criteria that determines which vehicles are searched, but random checks of cars should normally be made as

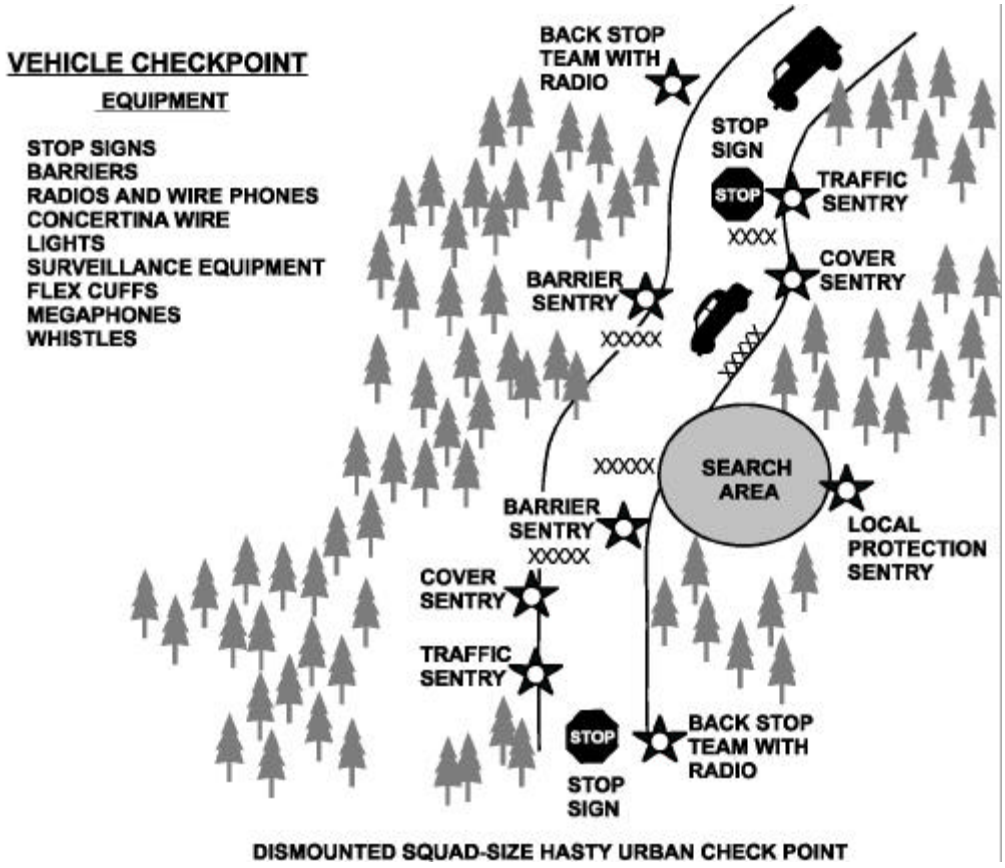

Figure 13-8. Dismounted Squad-sized Hasty Urban Vehicle Checkpoint.

well. While the vehicle is being searched the driver should accompany the searcher around the vehicle.

- Vehicle occupants should be made to exit the vehicle and then searched. Whenever possible, women should be searched by female police or female Marines.
- All patrol members should conduct themselves with courtesy and politeness. If nothing is found, an apology for the inconvenience is recommended.
- A hasty vehicle checkpoint should not be conducted any longer than 30 minutes for security reasons.
- The ROE should dictate whether or not action should be taken against vehicles that fail to stop at the checkpoint. Failure of a vehicle to stop does not automatically give authorization to fire.

Observation Posts

Urban observation posts are established to provide extended security, not only for patrol bases but also for patrols operating within the observation post's sector of observation. Observation posts can be established in conjunction with sniper operations and for providing overwatch for patrols operating within their sector of observation. Observation posts are nor-mally positioned on dominating terrain or in buildings outside the patrol base itself.

Insertion to the observation posts and conduct of observation may be either overt or clandestine in nature. Overt observation posts usually will be hardened positions to increase security. A patrol provides cover while the observation post is being inserted. A clandestine observation post relies on stealth of insertion and occupation for protection. It is normally positioned in abandoned buildings to cover sectors of observation that overt observation posts cannot. Because of their nature, clandestine observation posts are difficult to successfully establish and should not be manned for an extended period of time. Orders establishing observation posts (and patrols) must address the method of extraction as well as actions upon compromise/attack.

Cordon and Search

The cordon and search mission involves isolating a predesignated area by cordoning it off and systematically searching for enemy personnel, weapons, supplies, explosives or communications equipment. While large-scale cordon and search operations are planned and rehearsed in advance and normally entail extensive coordination with local law enforcement agencies, a squad-sized urban patrol may often conduct a cordon and search of a point target—searching one house or building identified by intelligence as a possible weapons cache.

The basic principle of a search of a populated area is to conduct it with limited inconvenience to the population. The populace may be inconvenienced to the point where they will discourage urban guerillas or insurgents from remaining in the area, but not to the point that they will assist the enemy as a result of the search.

Upon receiving intelligence that warrants the searching of a building or a specific tasking from higher headquarters, A&S elements of the patrol move to establish an inner cordon around the target building to seal it off, with the primary intent of preventing movement out of the targeted building.

On order, the designated reaction force deploys to establish an outer cordon, oriented outward some distance from the inner cordon and covering routes leading into the area in order to prevent outside interference/reinforcement. The reaction force maintains a reserve to reinforce either cordon or react to unfolding events (civil disturbance in response to the operation).

Once the cordons have been established, the patrol leader, with the assistance of local police or interpreters, informs the local populace that a building is about to be searched, that a house curfew is in effect (if permitted by higher headquarters), and that all occupants should remain indoors. Occupants of the target house are instructed to gather at a central location to stay out of the way of the search party.

The headquarters element, having linked up with any required assistance (explosive ordnance disposal (EOD), ITT, etc.) now acts as the search party and accompanies local police. A female searcher should be included in the party, if necessary.

Occupants are searched and screened first for possible enemy personnel. Apprehended persons are evacuated as soon as possible.

The head of the household should accompany the search party throughout the operation to be able to counter incriminating evidence and possible accusations of theft and looting against Marines. If possible, a prominent member of the local community should act as a witness.

Buildings are best searched from top to bottom. Ideally, the search is conducted with the assistance of combat engineers using mine detectors to locate hidden arms and ammunition.

If the targeted building is empty or the occupant refuses entry, it may be necessary to forcefully enter the premises to conduct a search of the dwelling. If an unoccupied house containing property is searched, arrangements should be made with the local community to secure it until its occupants return. Unnecessary force and damage to property should be avoided during the search.

Motorized Urban Patrols

The advantages of a motorized urban patrols is their ability to capitalize on the speed, mobility, and protection offered by various vehicles. They may be motorized, mechanized or armored vehicles or a combination. Generally, motorized urban patrols possess greater combat power than dismounted patrols and can cover larger areas faster than dismounted patrols.

The disadvantages of motorized urban patrols is that they are restricted to roads and are vulnerable to ambush by the enemy. They are also restricted in their ability to interact with the local populace.

Motorized patrols are generally organized in the same manner as dismounted patrols (see fig. 13-9). Unit integrity is maintained when assigning personnel to specific vehicles.

The urban patrolling principles apply to motorized patrols in much the same manner as dismounted patrols. Mutual support and depth are achieved by maintaining constant observation between vehicles and coordinating support with any dismounted patrols in the area. All-around security is achieved through the use of constant observation as well as the vehicle's mobility and firepower. Positive communications between units or teams are maintained through vehicle radios. Patrol routes and speeds are varied to promote deception or pattern avoidance.

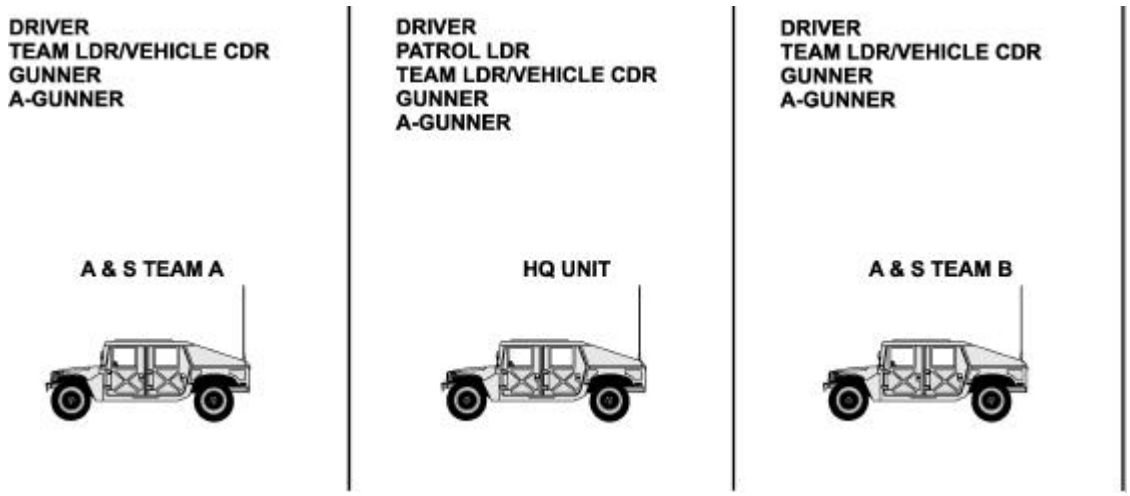

Figure 13-9. Organization of a Squad-sized Motorized Patrol.

The canalizing nature of streets and alleys force vehicular patrols to use a traveling overwatch movement technique to reduce vulnerability to ambushes. All vehicles travel at a moderate rate of speed with the lead vehicle stopping only to investigate potential danger areas. If vehicles must stop in danger areas, designated crew members' will dismount to provide security. The gunner will remain at the ready and in the turret while the driver remains in the driver's seat with the vehicle running.

Vehicles should move at a high rate of speed only when responding to an incident. At all other times, vehicle speed should be between 15 to 20 mph to allow for quick reaction and good observation. Distances between vehicles should be approximately 50 meters (one half to one city block) or such that visual contact and mutual support are ensured. Particular care is taken at major road junctions and other danger areas to ensure individual vehicles do not become isolated.

Vehicles with doors removed generally enhance observation and overall security, yet expose Marines to thrown objects, theft and concealment.

CHAPTER 14. INFORMATION AND REPORTS

It is necessary that patrol leaders and all patrol members be trained in observing and reporting their observations accurately. The leader of a patrol should have all members of the patrol immediately signal or report any information obtained. These reports should not be restricted to information about the enemy, but should also include information about the terrain, such as newly discovered roads, trails, swamps, and streams. The leader includes all information in the report to the officer dispatching the patrol. (Refer to MCRP 2-15.3, *Reconnaissance Reports Guide*, for detailed report formats.)

14001. REPORTING

The officer dispatching the patrol instructs the patrol leader on whether and when messages are to be sent back during the patrol and what communication means to use. Messages may be oral or written. They must be accurate, clear, and complete. Every message should answer the question what, where, and when. For a detailed discussion on reporting, see paragraph 6002.

Verbal Messages

A patrol leader sending a verbal message should make it simple, brief, and avoid using numbers and names. The messenger should accurately repeat the message back to the patrol leader before leaving.

Written Messages

In preparing written messages, the patrol leader must distinguish between fact and opinion. Information about the enemy should include: strength; armament and equipment; actions; location and direction of movement; unit destination, if known; time enemy was observed; and the patrol's location when the observation was made. Use of an overlay or sketch may often simplify the message.

Messengers

A messenger team is given exact instructions as to where to deliver the message and the route to take. Any information obtained along the route should be reported at the time the message is delivered. Messengers must be given all practical assistance. If in danger of capture, the messenger immediately destroys the message.

Radio and Signals

If the patrol is provided with a radio, a definite radio schedule for checking in must be arranged before departure of the patrol. The patrol leader takes every precaution to ensure that codes and copies of messages are not captured by the enemy. If a close reconnaissance of enemy lines is required, the radio should be left in a concealed location at a safe distance from the enemy. Once a report is sent by radio, the patrol should immediately leave the area to avoid the possibility of detection by enemy locating devices. Pyrotechnics (flares, colored smoke, grenades) and air-ground panels may also be used by patrols for reporting information by a prearranged signal.

SALUTE Report

Information must be reported as quickly, accurately, and as completely as possible. An established method to remember how and what to report about the enemy is to use the acronym SALUTE:

Size
Activity
Location
Unit
Time
Equipment

An example of such a report is: "Seven enemy soldiers, unit unknown, traveling SW, crossed road junction on BLACK RIDGE at 211300 August carrying one machine gun and one rocket launcher."

14002. CAPTURED ITEMS

Every patrol should make a practice of searching enemy casualties, prisoners, and installations first for

booby traps, then for equipment, papers, maps, messages, orders, diaries, and codes. Search techniques should be practiced often in order to reduce the time exposed to potentially dangerous situations. Items found are collected by the patrol leader and turned in with the patrol report. The items found are marked as to time and place of capture. When possible, captured items should be linked to a specific prisoner who possessed the items or to the place where the items were found. When this is done, the enemy prisoner of war tag and item tag are marked accordingly. The patrol leader must impress upon the members of the patrol the importance of turning in all documents and equipment. Furthermore, the patrol leader must ensure all information gathered by the patrol is quickly disseminated.

14003. PRISONERS

A patrol normally does not capture prisoners unless required by the mission. If prisoners are taken, the "5S and T" rule applies. This memory aid stands for: search, segregate, silence, speed, safeguard, and tag.

Search. Prisoners are body-searched thoroughly for weapons and documents as soon as they have been captured. This search must include the helmet, body armor, and gas mask. These items are left with the prisoner for protection until the patrol is completed. Weapons, equipment, and documents are tagged and immediately sent to the patrol leader.

Segregate. Prisoners are segregated into isolated groups: officers, noncommissioned officers (NCOs), privates, deserters, and civilians. By segregating prisoners, it makes it more difficult for leaders to organize escapes and issue orders to subordinates.

Silence. Silence is essential. Do not allow prisoners to talk to each other.

Speed. Speed is required in getting prisoners to the commander who dispatched the patrol. Timely information secured from prisoners is essential.

Safeguard. Prisoners are safeguarded as they are moved. They are restrained, but not abused. If the patrol will soon reach friendly positions, prisoners are not given cigarettes, food or water until they have been questioned by interrogators. If the patrol will not return to a friendly position for a lengthy time, the prisoners are given food, water and medical aid.

Tag. Equipment and personal effects recovered from prisoners are tagged so that they may later be matched back to specific individuals.

14004. PATROL REPORT

Every patrol leader makes a report when the patrol returns. Unless otherwise directed, the report is made to the person ordering the patrol. If the situation permits, the report is written and supported by overlays and/or sketches. The patrol leader's report should be a complete account of everything of military importance observed or encountered by the patrol while on the assigned mission. It should include the following information:

- Size and composition of patrol.
- Tasks and purpose (mission).
- Time of departure.
- Time of return.
- Routes, out and back (show by sketch, azimuth, trace on map).
- Terrain (general description to include any man-made or natural obstacles and critical terrain features which, if occupied by either enemy or friendly forces, would allow them to control the surrounding area).
- Enemy (size, activity, location, unit, time, equipment).
- Any map corrections (show on map).
- Miscellaneous information not covered elsewhere in report.
- Results of enemy encounters.
- Condition of patrol, including disposition of any dead or wounded.
- Conclusion and recommendations.

14005. PATROL CRITIQUE

After the patrol has rested and eaten, the patrol leader should hold a critique. Constructive criticism is made. It is an excellent time to prepare for future patrols by going over lessons learned as a result of the patrol.

APPENDIX A. PATROL WARNING ORDER

The warning order is issued as soon as practical with all available information included to assist patrol members in preparation.

1. Situation. Friendly and enemy situation information necessary for initial preparation.

2. Mission. Statement of what the patrol is to accomplish, and the purpose for accomplishing it. When, how, and where will be discussed in the patrol order.

3. Execution

a. Task Organization. General patrol organization and assignment of responsibilities if known; otherwise, promulgate in the patrol order.

b. Tasks. Alert subordinate leaders to patrol tasks (e.g., stream crossing, helicopter rappelling, demolitions) requiring preparation prior to departure.

c. Coordinating Instructions

(1) Time schedule and location for individual preparation, rest, briefings, in-spection, rehearsal, and departure.

(2) Time, place, uniform, and equipment for receiving the patrol order.

(3) Tasks for subordinate leaders to direct and supervise the initial preparation which may include drawing ammunition, rations, and special equipment; conducting immediate action drills or other necessary individual or unit training; meeting and briefing attachment personnel; reconnoitering the area for passage of lines; and coordinating with the necessary unit leaders.

(4) Preliminary guidance to specialists and key individuals regarding their roles and organization within the patrol.

4. Administration and Logistics

a. Individual uniform, equipment, weapons, and prescribed load of rations, water, and ammunition.

b. Crew-served weapons (if required) and guidance regarding distribution of weapons and ammunition during movement.

c. Special equipment requirements (wire cutters, demolitions, radios, flashlights, infrared equipment, mines, binoculars) and their distribution during movement.

d. Restricted or prohibited items.

5. Command and Signal

a. Designation of assistant patrol leader and his role in preparation.

b. Designation of navigators and radio operators (if required).

c. Brief outline of patrol leader's schedule for preparation, and where he can be reached.

APPENDIX B. PATROL ORDER

A patrol order follows a warning order. Any of the following subjects that have been addressed in the warning order may be omitted with the exception of the mission statement. A patrol order is more detailed than a 5-paragraph squad order in that a great deal of attention is given to individual duties.

The patrol order also provides orientation information, both enemy and friendly, that impacts the patrol and enemy forces. This information can include, but is not limited to, weather, terrain, visibility, NBC considerations, local population situation, terrain model and/or map orientation, and behavior.

1. Situation

   a. Enemy Forces

      (1) Composition, disposition, and strength are based on size, activity, location, unit, time, and equipment (SALUTE).

      (2) Capabilities and limitations to defend, reinforce, attack, withdraw, and delay (DRAW-D).

      (3) Enemy's most probable course of action.

   b. Friendly Forces

      (1) Mission of next higher unit (task and commander's intent).

      (2) Adjacent unit missions (task and intent). Also identify left, front, right, and rear.

   c. Attachments and Detachments. (date and time effective).

2. Mission. The mission is the task to be accomplished, and its purpose (who, what, where, when, and why). For patrols, specify if the mission or time has priority.

3. Execution

   a. Commander's Intent and Concept of Operations

      (1) Commander's intent.

      (2) The concept of operations tells the where, how, and who and lays out the patrol leader's general scheme of maneuver and fire support plan. It outlines the following:

(a) Task organization of the patrol.

(b) Movement to the objective area, to include navigation method.

(c) Actions in the objective area.

(d) The return movement, to include navigation method.

(e) Use of supporting forces (including illumination, if required).

b. Subordinate Element Missions. Subordinate element missions (task and purpose) are assigned to elements, teams, and individuals, as required.

c. Coordinating Instructions. This paragraph contains instructions common to two or more elements, coordinating details, and control measures applicable to the patrol as a whole. At a minimum, it includes—

(1) Time of assembly in the assembly area.

(2) Time of inspections and rehearsals (if not already conducted).

(3) Time of departure and estimated time of return.

(4) Location of departure and reentry of friendly lines and the actions associated with departure and reentry.

(5) Details on the primary and alternate routes to and from the objective area.

(6) Details on formations and order of movement.

(7) Rally points and actions at rally points.

(8) Final preparation position and actions at this position.

(9) Objective rally point and actions at this point.

(10) Actions at danger areas.

(11) Actions in the event of enemy contact.

(12) Details on actions in the objective area not covered elsewhere.

(13) Estimated time of patrol debriefing upon return.

4. Administration and Logistics

a. Changes/additions to uniform, equipment, and prescribed loads from that given in the warning order.

b. Instructions for handling wounded and prisoners.

5. Command and Signal

a. Command Relationships. Identify key leaders and chain of command.

b. Signal. Challenge and password, arm and hand signals, special signals, and radio frequencies and call signs.

APPENDIX C. PATROL EVALUATION CHECKLIST

This appendix provides a comprehensive checklist of critical patrolling steps, techniques, and procedures to aid unit leaders to critique patrol performance during training. Unit leaders may use the list as they observe the performance of a patrol to provide the patrol leader with a detailed analysis of the performance.

Warning Order	Yes	No
Did the PL ensure all patrol members were present before issuing the warning order?		
Did the PL issue a brief statement on the enemy situation?		
Did the PL issue a brief statement on the friendly situation?		
Did the PL state the mission in a clear, positive manner?		
Did the PL list all members of the patrol including attachments?		
Was the chain of command for the patrol covered fully?		
Were all members of the patrol asigned positions and duties in particular squads and teams?		
Were all the necessary individual duties assigned?		
Did the PL follow established principles in organizing the patrol into squads and teams?		
Was each patrol member assigned a particular weapon to carry on patrol?		
Did the PL list all special equipment needed to accomplish the mission?		
Was required special equipment assigned to the proper element to carry?		
Did the PL select uniform and equiment common to all based on METT-T?		
Coordination with Adjacent Units		
Did the PL coordinate with other patrols operating to the right and left?		
Was the route out and back coordinated?		
Was the time of departure and return cocordinated?		
Were call signs and frequencies coordinated?		
Was a signal for the FPF coordinated so as not to approach friendly lines during this time?		
Coordination With Front Line Units		
Did the coordinator pass the size of the patrol?		
Was the time of departure and return coordinated?		
Did the coordinator give a general area of oeprations for the patrol?		
Did the coordinator ask for information on known or suspected enemy positions and/or obstacles?		
Did the coordinator ask about information on the latest enemy activity?		
Did the coordinator ask for detailed information on friendly fire support avalable and the unit's barrier plan?		
Was the location of the IRP established and coordinated?		
Did the coordinator ask the forward unit to monitor their patrol frequency?		
Was the current challenge and password confirmed?		
Did the coordinator request that all information coordinated be passed on to any relieving unti?		
Patrol Order		
General		
Did the PL check to ensure all patrol members were present before issuing the patrol order?		

	Yes	No
Did the PL issue the patrol order in a forceful, confident manner?		
Did the PL make maximum use of available visual aids in issuing the patrol order (i.e., terrain model, sand table, map board, chalkboard)?		
Did the PL issue the patrol order in correct sequence?		
Did the PL issue the entire patrol order without allowing interruptions by patrol members?		
Did the PL adequately answer all questions asked by patrol members		
Did paragraph 1a (Enemy Situation) include—		
A weather forecast for the period of operation?		
A description of the terrain over which the patrol was to operate?		
Identification or description of enemy units known to bein the area of operations?		
Known locations of enemy units?		
Recent activity of enemy units?		
Stength of enemy units in the operating area?		
Did paragraph 1b (Friendly Situation) include—		
Mission of the next higher unit?		
Locations, missions, and planned actions of units on right and left?		
Fire support available to support the patrol (as per the coordination)?		
Missions and routes of other patrols operating in the immediate area?		
Did paragraph 1c (Commander's Intent) include—		
All views and ides of what the commander wants to be accomplished?		
The final result desired by the commander?		
Did paragraph 1c (Attachments and Detachments) include—		
All attachments to patrol and effective time of attachment?		
All detachments from patrol and effective time of detachment?		
Did paragraph 2 (Mission) include, at a minimum—		
Who was to conduct the patrol?		
What the patrol was tasked to do (i.e., conduct a point recon patrol)?		
Where the action was to take place?		
Why the action was to take place (i.e., the purpose)?		
Did paragraph 3 a (Commander's Intent and Concept of Operations) include—		
A complete concept of operations?		
A detailed description of the mission of elements?		
A detailed description of the mission of teams?		
A detailed description of the duties of specific individuals (i.e., navigator, compass man, pace m an, corpsman, APL)?		
Time of departure and time of return?		

	Yes	No
Type of formations and order of movement to be used?		
Description of the route and alternate routes(s) to include azimuths and distances between checkpoints as a minimum?		
Techniques to be used in the departure from friendly areas?		
Techniques to be used for the reentry into friendly areas?		
Location of the IRP and a tentative ORP, to include grid coordinates and recognizable terrain features?		
Method for designating and passing rally points?		
Actions to be taken at rally points if their use became necessary?		
Actions to be taken in the event of enemy contact?		
Actions to be taken at danger areas?		
Complete, detailed description of actions to be taken at the objective?		
Times and locations for rehearsals and the order of priority for rehearsals?		
Times and lcoations for inspections and the methods of conduct (to include uniform and equipment to be worn and/or carried)?		
Where, when, and by whom the debriefing is to be conducted?		
Did paragraph 4 (Administration and Logistics) include—		
Rations to be carried or reference to the warning order if there is no change?		
Arms and ammunition to be carried or reference to the warning order if there is no change?		
Uniform and equipment to be worn and carried or reference to the warning order if there is no change?		
Method for handling wounded or dead?		
Method for handling prisoners?		
Did paragraph 5a (Signal) include—		
Complete description of all signals, code words, frequencies, and call signs to be used within the patrol?		
Were signals adequate?		
Radio call signs to be used?		
Primary and alternate frequencies to be used?		
Call signs and frequencies to be used with other units in the area of oeprations (if applicable)?		
Required reports to be transmitted to higher headquarters, along with occasions for reporting?		
Code words and brevity codes to be used between the patrol and higher headquarters?		
Current challenge and password to be used in friendly held areas?		
Current challenge and password to be used forward of FEBA?		
Did paragraph 5b (Command) include—		
Chain of command or reference to the warning order if there is not change?		
Location of the PL during all stages of operation?		

	Yes	No
Location of the APL during all stages of operation?		
Inspection Rehearsal		
General		
Did the P L adequately use the allotted inspection time?		
Was the inspection conducted in an orderly manner?		
During the inspection, did the PL check the following:		
Completeness and correctness of uniform?		
Completeness of all equipment necessary to accomplish the mission?		
Operational condition of equipment?		
Did the PL question members to ensure they knew—		
The mission of the patrol?		
The concept of operations?		
Their individual duties and responsibilities?		
Chain of command and succession?		
Duties and responsibilities of key personnel?		
Did the PL utilize the rehearsal area to conform as much as possible to area of operations?		
Were the following major actions rehearsed:		
Actions at the objective?		
Actions at danger areas?		
Actions on enemy contacts?		
Departure and reentry of friendly lines?		
Did the PL critique each action after it had been rehearsed?		
Were interpatrol communications and control measures checked at rehearsal?		
Did the PL maintain control of the patrol during the rehearsal?		
Movement		
Did the PL use proper formations for movement?		
Did the PL adequately control the point team?		
Did the PL check the compass men?		
Was the PL aware of his position at all times?		
Was light and noise discipline enforced?		
Was the rate of movement appropriate for the mission?		
Did the PL make full use of pace?		
Did the PL make full use of count?		
Was proper security maintained during movement?		
Did the PL select and pass proper rallying points?		
Did the PL ensure that all members knew location of rallying points?		

	Yes	No
Did the PL properly use arm and hand signals?		
Did the PL recognize and halt the patrol a safe distance from a danger area?		
If the PL conducted a map check, did he conduct it properly (light discipline, security, etc.)		
Did designated individuals reconnoiter the far side of a danger area properly?		
Were support teams emplaced properly?		
Did the PL use a proper formation in crossing the danger area?		
Were reports made on enemy contact and at checkpoints?		
Actions on Enemy Contact		
Did the PL halt patrol a safe distance from a tentative ORP?		
Did the PL issue an adequate frag order before departing to look for a tentative ORP?		
Did the PL take appropriate personnel to look for the ORP?		
Did the PL select a suitable ORP?		
Did the PL secure the site adequately?		
Did the patrol occupy the ORP as stated in the patrol order or subsequent frag order?		
Did the patrol occupy the ORP in an orderly manner?		
Did the PL maintain control of the patrol during occupation of the ORP?		
Did the PL issue a satisfactory contingency plan to the APL before departing on a leader's recon?		
Did the PL take appropriate personnel on a leader's recon?		
Did the PL maintain or ensure that the patrol leader had communications with the patrol?		
Did the patrol avoid being detected by the enemy during the leader's recon?		
If contact was made, did the PL take appropriate action?		
Was security maintained during the leader's recon?		
Did the PL ensure the objective was kept under surveillance?		
Were appropriate orders given to surveillance teams?		
If a leader recon proved a tentative ORP unsuitable, did the PL move the ORP?		
Was a satisfactory leader's recon conducted?		
Was the ORP move conducted in a satisfactory and orderly manner?		
On return to the ORP, did the PL issue appropriate frag order and allow enough time for dissemination?		
Actions at Objective		
Did the PL issue a frag order for action at the objective?		
Was security emplaced prior to the teams departing from the ORP?		
Did the PL employ the terrain at the objective to the best advantage?		
Was stealth maintained while moving into the objective?		

	Yes	No
Did the Pl exercise positive control of squads, teams, and individuals at the objective?		
Were actions at the objective in accordance with the details outlined in the patrol order?		
Did the PL make use of supporting arms at the objective?		
Was the action at the objective successful?		
Was withdrawal from the objective accomplished quickly and orderly?		
Did units withdraw according to the details reflected in the patrol order?		
Was reorganization at the ORP completed in an expeditious and orderly manner?		
Did the patrol withdraw from the ORP quickly and quietly?		

APPENDIX D. AMBUSH FORMATIONS

Formations discussed here are identified by names which correspond to the general pattern formed on the ground by deployment of the assault element.

Line Formation

The assault element is deployed generally parallel to the route of movement of the enemy. This positions the assault element parallel to the long axis of the killing zone and subjects the target to heavy flanking fire. The size of the force which can be trapped in the killing zone is limited by the area the assault element can effectively cover. The enemy is trapped in the killing zone by natural obstacles, mines, demolitions, and direct fires. (See fig. D-l.)

A disadvantage of the line formation is the chance that lateral dispersion of the target may be too great for

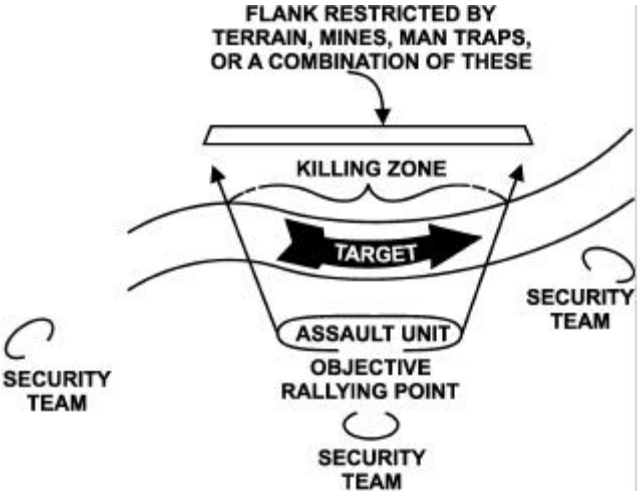

Figure D-1. Line Formation (Harassing or Destruction Ambush).

effective coverage. The line formation is appropriate in close terrain that restricts enemy maneuver, and in open terrain where one flank is protected by natural obstacles or can be protected by mines and demolitions. Similar obstacles can be placed between the attack force and the killing zone to provide protection from possible enemy counter attack. When an ambush is deployed in this manner, access lanes are left so that the enemy can be assaulted. (See fig. D-2.)

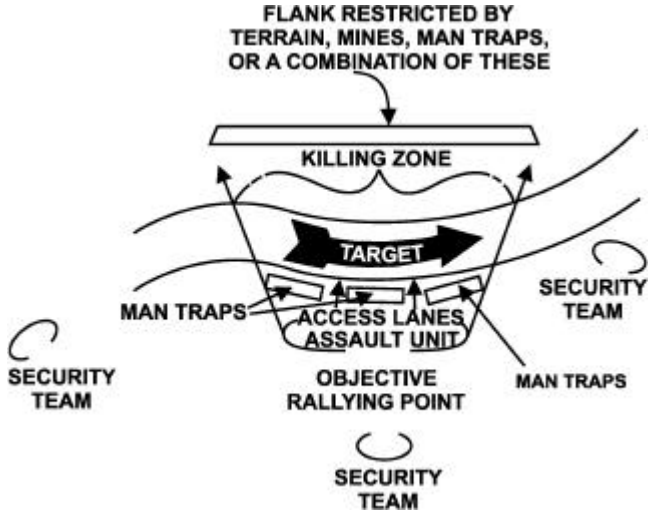

Figure D-2. Line Formation (Access Lanes for Assault of Target).

The main advantage of the line formation is its relative ease of control under all conditions of visibility.

L Formation

The “L” shaped formation is a variation of the line formation. This formation is very flexible because it can be established on a straight stretch of a trail or road (see fig. D-3) or at a sharp bend in a trail or a road (See fig. D-4 on page D-2).The long side of the assault element is parallel to the killing zone and delivers flanking fire. The short side of the attack force is at the

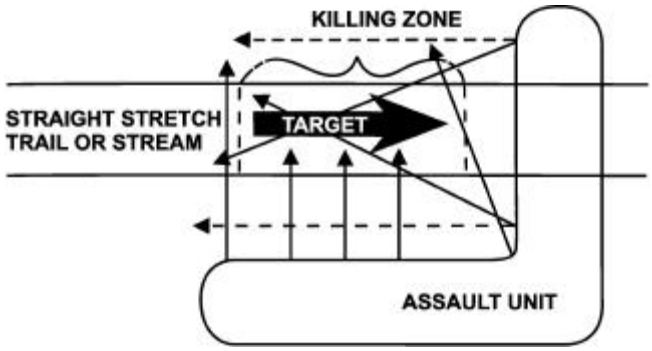

Figure D-3. “L” Formation (Destruction Ambush).

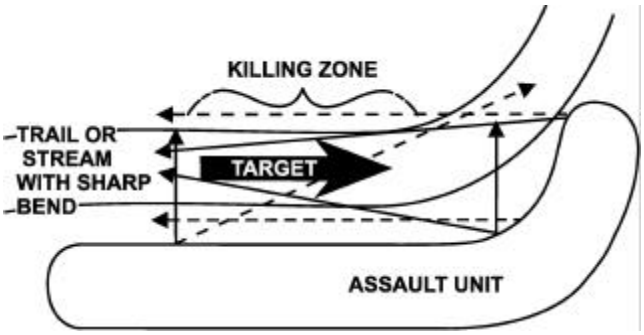

Figure D-4. "L" Formation (Bend of Trail or Stream).

end of, and at right angles to, the killing zone and delivers enfilading fire that interlocks with fire from the long side. When appropriate, fire from the short side can be shifted to parallel the long side if the enemy attempts to assault or escape in the opposite direction. In addition, the short side prevents escape and reinforcement. (See fig. D-5.)

"Z" Formation

The "Z" shaped formation is another variation of the line formation.

The assault element is deployed as in the "L" formation, but with an additional side so that the formation resembles a "Z". (See fig. D-6).

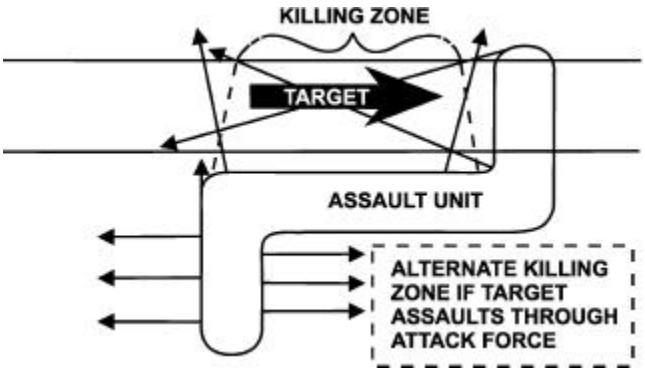

Figure D-6. "Z" Formation.

The additional wing may serve any of the following purposes:

- To engage an enemy force attempting to relieve or reinforce the enemy unit engaged in the kill zone.
- To seal the end of the killing zone.
- To restrict a flank.
- To prevent an envelopment.

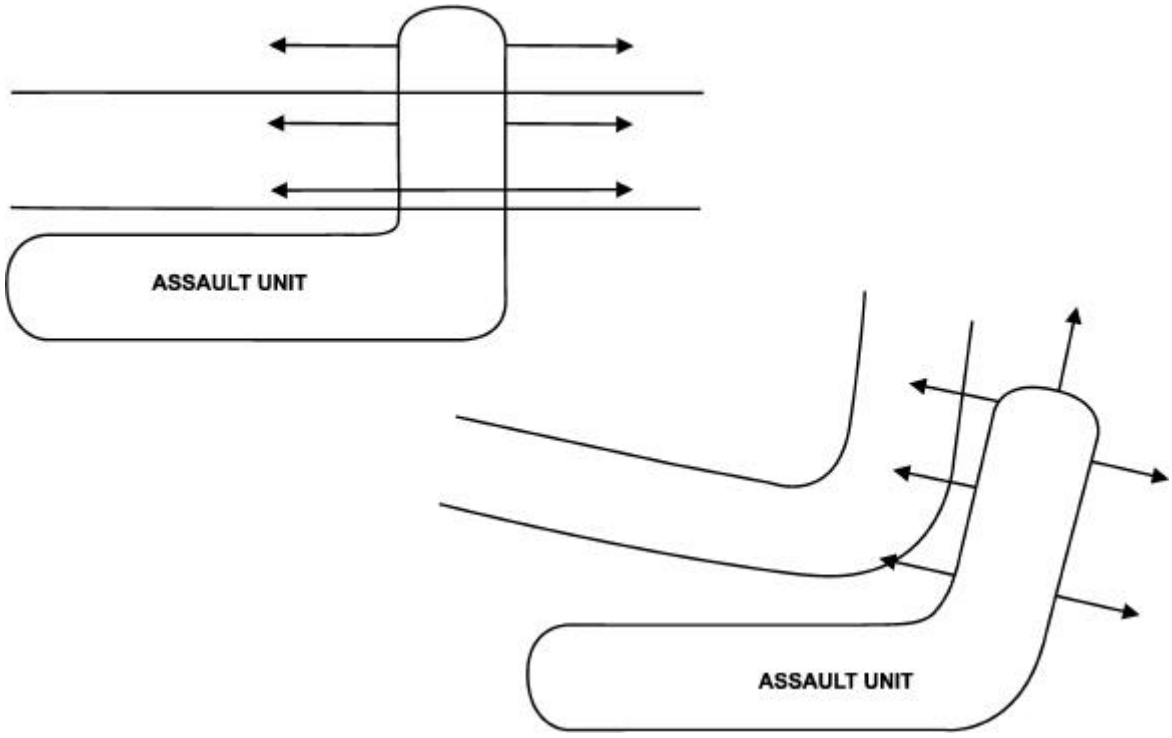

Figure D-5. "L" Formation.

"T" Formation

In the "T" shaped formation, the assault element is deployed across (perpendicular to) the enemy's route of movement so that its position forms the crossing of a "T" at the top. (See fig. D-7.)

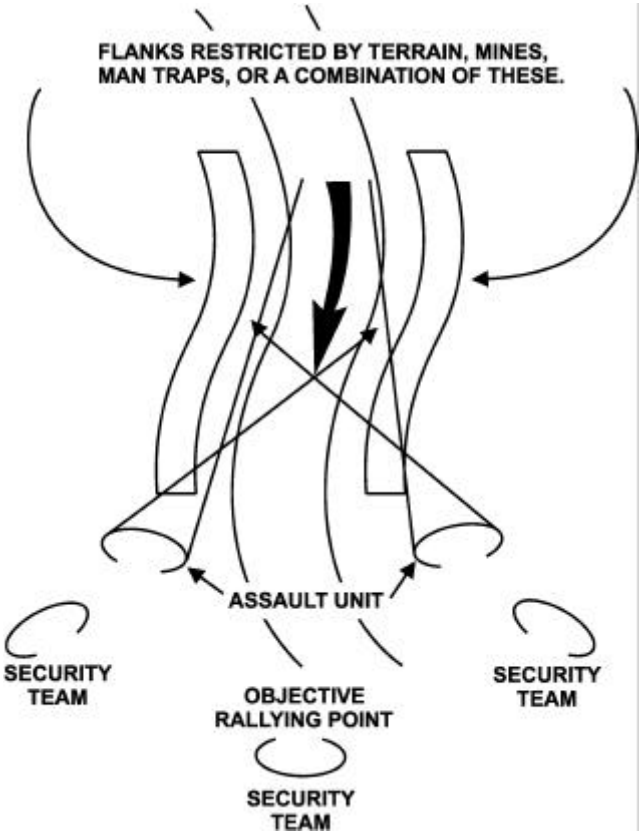

Figure D-7. "T" Formation.

This formation can be used day or night to establish an ambush to interdict movement through open areas that are hard to seal off.

A small force can use the "T" formation to harass, slow, and disorganize a larger force. When the lead elements of the enemy are engaged, they will normally attempt to maneuver right or left to close with the ambush. Mines and other obstacles placed to the flanks of the killing zones slow the enemy's movements and permit the ambush force to deliver heavy fire and withdraw without becoming decisively engaged.

The "T" formation can be used to interdict small groups attempting night movement across open areas. For example, the assault element is deployed along an avenue of approach with every second man facing the opposite direction. The attack of the enemy approaching from either direction requires only that every second man may shift to the opposite side of the formation. Each man fires only to his front and only when the enemy is at a very close range. Attack is by fire only and each man keeps the enemy under fire as long as it remains to his front.

If the enemy attempts to escape in either direction along the killing zone, each Marine takes the enemy under fire as the enemy comes into the Marine's sector of fire. The "T" formation is very effective at halting infiltration. But it has one chief disadvantage; there is a possibility that the ambush will engage a superior force at night while spread out. (See fig. D-8.)

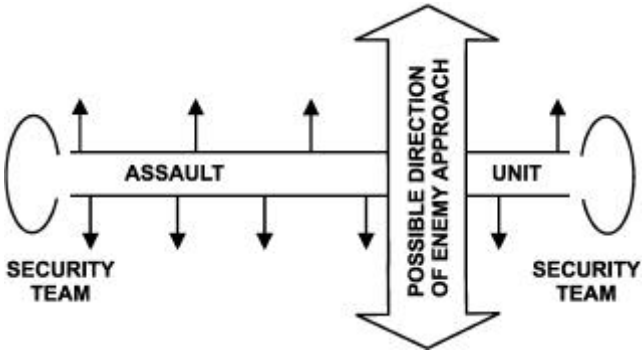

Figure D-8. "T" Formation (Target Approaching from Either Direction).

The "V" Formation

The "V" shaped formation is deployed along both sides of the enemy's route of movement so that it forms a "V"; care is taken to ensure that neither group (within the "V") fires into the other.

This formation subjects the enemy to both enfilading and interlocking fire. The "V" formation is best suited for fairly open terrain but can also be used in close terrain. When established in close terrain, the legs of the "V" close in as the lead element of the enemy force approaches the apex of the "V", and opens fire at a close range.

Here, even more than in open terrain, all movement and fire must be carefully coordinated and controlled to ensure that the fire of one wing does not endanger the other wing. The wider separation of forces makes this formation difficult to control, and there are few sites that favor its use. Its main advantage is that it is

difficult for the enemy to detect the ambush until it is well into the killing zone. (See figs. D-9 and D-10.)

Triangle Formation

The triangle is a variation of the "V" formation and can be varied in three ways:

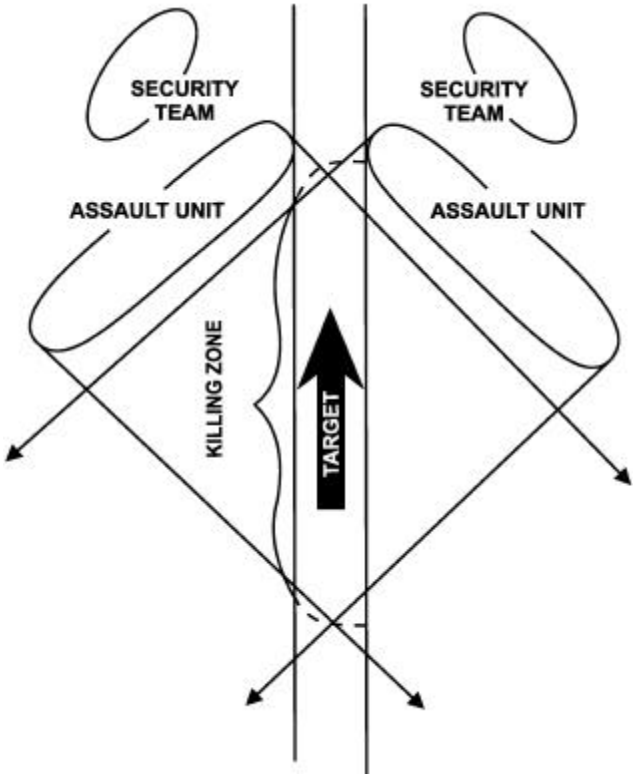

Figure D-9. "V" Formation (Open Terrain).

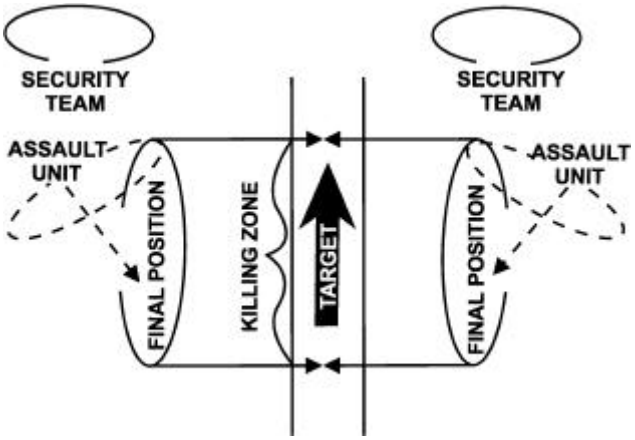

Figure D-10. "V" Formation (Close Terrain).

Closed Triangle Formation

(See fig. D-11.) The assault element is deployed in three teams, positioned so that they form a triangle (or closed "V"). An automatic weapon is placed at each point of the triangle and positioned so that it can be shifted quickly to interlock with either of the others. Men are positioned so that their sectors of fire overlap. Mortars may be positioned inside the triangle.

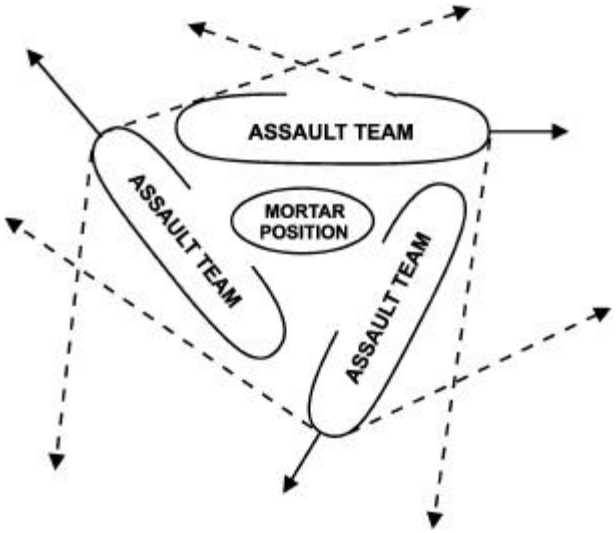

Figure D-11. Closed Triangle Formation (Night Ambush).

When deployed in this manner, the triangle ambush is used to interdict night movement through open areas. When enemy approach is likely to be from any direction, this formation provides all-around security, and security forces are deployed only when they can be positioned so that if detected by an approaching enemy, they will not compromise the ambush. Attack is by fire only, and the enemy is allowed to approach within close range before fire is initiated.

The advantages of the closed triangle formation are ease of control, all-around security, and the enemy can be brought under the fire of at least two automatic weapons, regardless of the direction they approach.

Disadvantages are that it requires a force of platoon size or larger to reduce the danger of being overrun by an unexpectedly large force and that one or more sides of the triangle may come under enfilade fire. The lack of dispersion, particularly at the points, increases the danger from enemy mortar fire.

Open Triangle Harassing Formation

This variation of the triangle ambush enables a small force to harass, slow, and inflict heavy casualties upon a large force without itself being decisively engaged. The assault element is deployed in three teams, positioned so that each team becomes a corner of a triangle containing the killing zone. (See fig. D-12.)

When the enemy enters the killing zone, the team to the enemy's front opens fire on the leading element. When the enemy counterattacks, the group withdraws and the team on the enemy's flank opens fire. When this team is attacked, the team to the opposite flank opens fire. This process is repeated until the enemy is pulled apart. Each team reoccupies its position, if possible, and continues to inflict the maximum damage possible without becoming decisively engaged.

Open Triangle Destruction Formation

The assault element is again deployed in three teams, positioned so that each team is a point of the triangle, 200 to 300 meters apart. The killing zone is the area within the triangle. The enemy is allowed to enter the killing zone; the nearest team attacks by fire. As the enemy attempts to maneuver or withdraw, the other teams open fire. One or more teams, as directed, assault or maneuver to envelop or destroy the enemy. (See fig. D-13 on page D-6.)

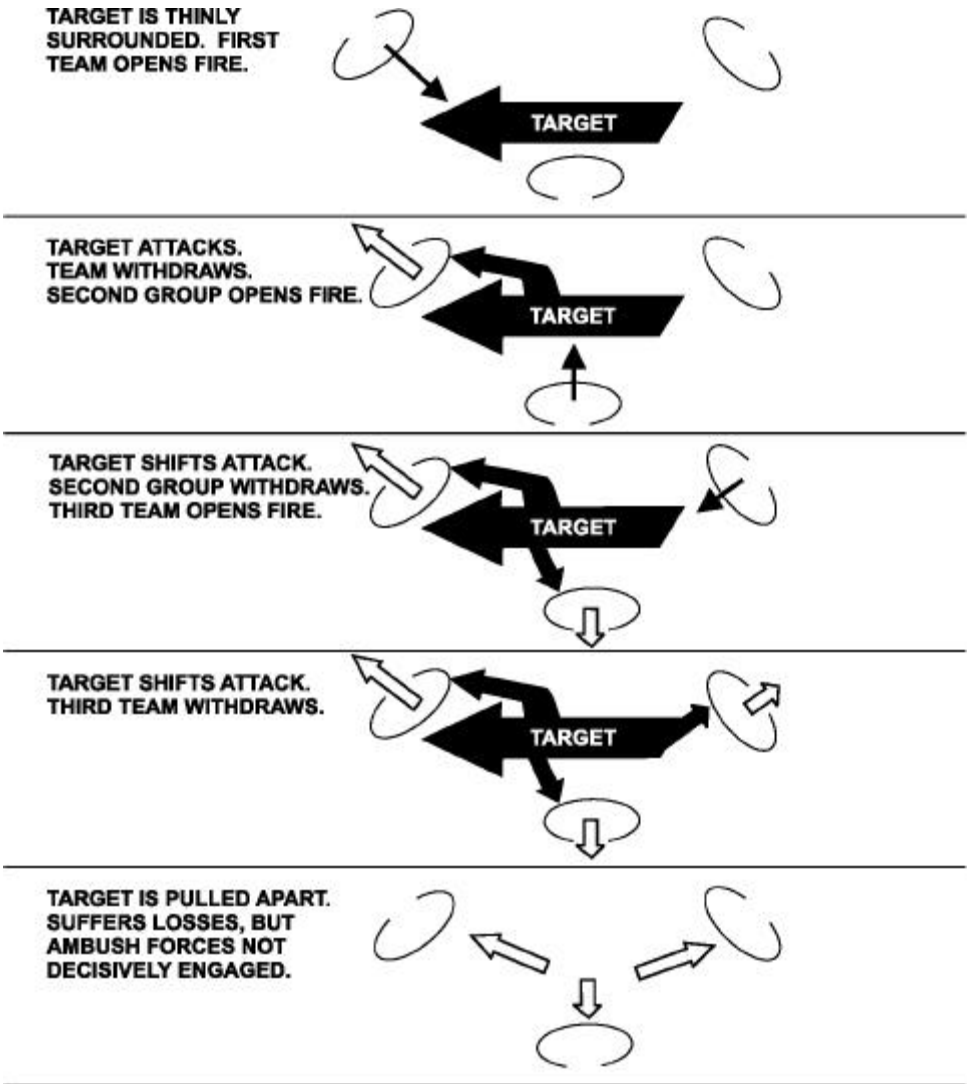
TARGET IS THINLY SURROUNDED. FIRST TEAM OPENS FIRE.
TARGET
TARGET ATTACKS. TEAM WITHDRAWS. SECOND GROUP OPENS FIRE.
TARGET
TARGET SHIFTS ATTACK. SECOND GROUP WITHDRAWS. THIRD TEAM OPENS FIRE.
TARGET
TARGET SHIFTS ATTACK. THIRD TEAM WITHDRAWS.
TARGET
TARGET IS PULLED APART. SUFFERS LOSSES, BUT AMBUSH FORCES NOT DECISIVELY ENGAGED.

Figure D-12. Open Triangle Formation.

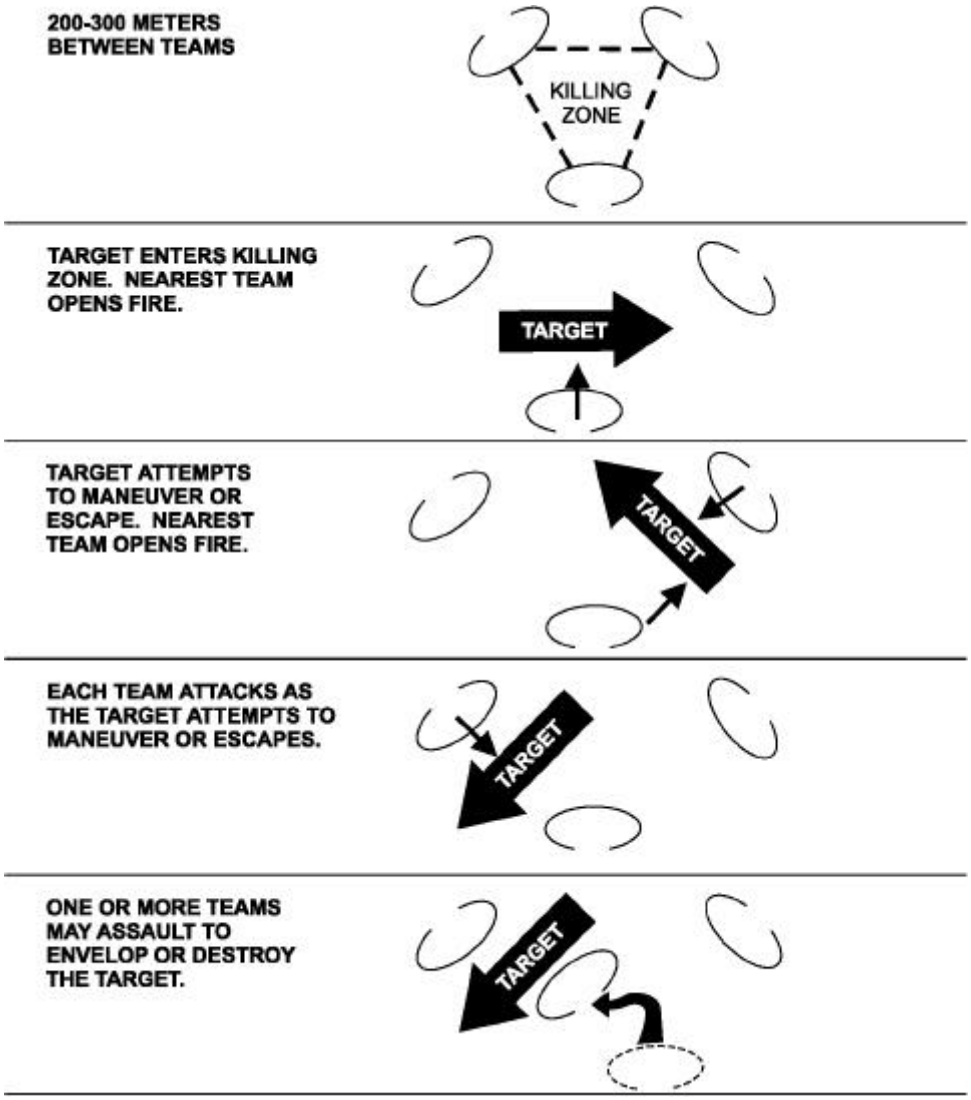
200-300 METERS BETWEEN TEAMS
KILLING ZONE
TARGET ENTERS KILLING ZONE. NEAREST TEAM OPENS FIRE.
TARGET
TARGET ATTEMPTS TO MANEUVER OR ESCAPE. NEAREST TEAM OPENS FIRE.
TARGET
EACH TEAM ATTACKS AS THE TARGET ATTEMPTS TO MANEUVER OR ESCAPES.
TARGET
ONE OR MORE TEAMS MAY ASSAULT TO ENVELOP OR DESTROY THE TARGET.
TARGET

Figure D-13. Open Triangle Formation (Destruction Ambush).

This formation is suitable for platoon-size or larger ambush forces. A smaller force would be in too great a danger of being overrun. Another disadvantage is that control, in assaulting or maneuvering, is very difficult. Very close coordination and control are necessary to ensure that assaulting or maneuvering teams are not fired on by another team. The ambush site must be a fairly level open area that provides concealment around its border for the ambush force.

The Box Formation

The "box" formation is similar in purpose to the open triangle ambush. The assault element is deployed in four teams, positioned so that each team becomes a corner of a square or rectangle containing the killing zone. It can be used for a harassing or destruction ambush in the same manner as the variations of the open triangle formation. (See figs D-14 on page D-7 and D-15 on page D-8.)

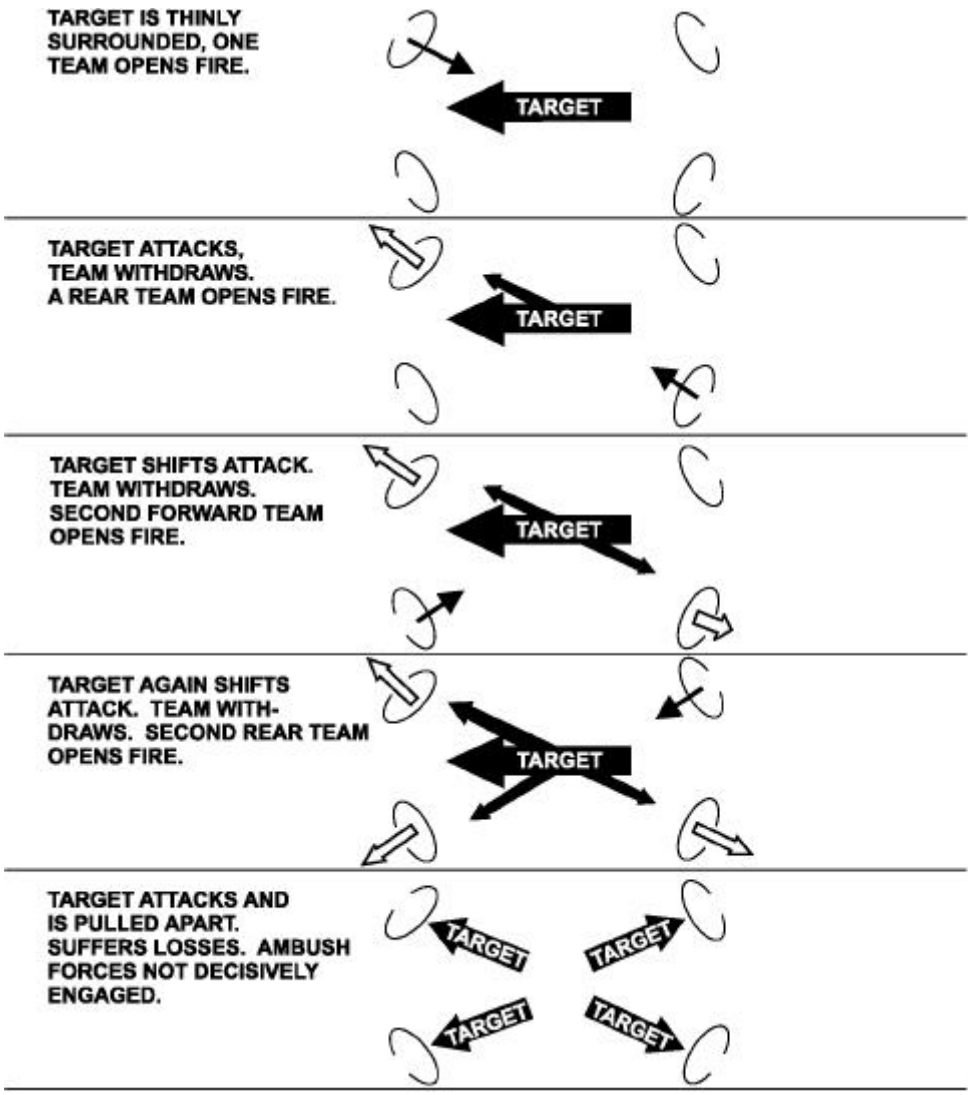
TARGET IS THINLY SURROUNDED, ONE TEAM OPENS FIRE.
TARGET
TARGET ATTACKS, TEAM WITHDRAWS. A REAR TEAM OPENS FIRE.
TARGET
TARGET SHIFTS ATTACK. TEAM WITHDRAWS. SECOND FORWARD TEAM OPENS FIRE.
TARGET
TARGET AGAIN SHIFTS ATTACK. TEAM WITH-DRAWS. SECOND REAR TEAM OPENS FIRE.
TARGET
TARGET ATTACKS AND IS PULLED APART. SUFFERS LOSSES. AMBUSH FORCES NOT DECISIVELY ENGAGED.
TARGET
TARGET
TARGET
TARGET

Figure D-14. Box Formation (Harrassing Ambush).

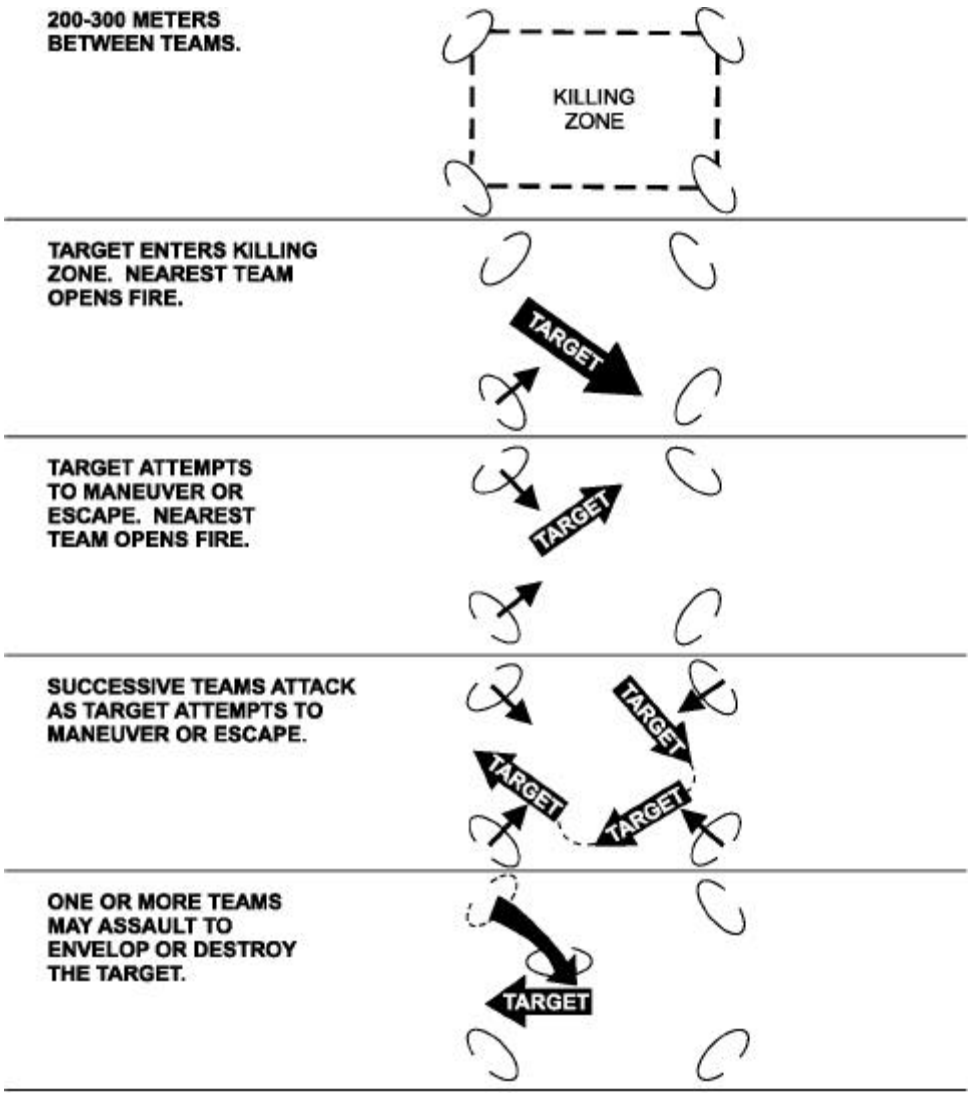
200-300 METERS BETWEEN TEAMS.
KILLING ZONE
TARGET ENTERS KILLING ZONE. NEAREST TEAM OPENS FIRE.
TARGET
TARGET ATTEMPTS TO MANEUVER OR ESCAPE. NEAREST TEAM OPENS FIRE.
TARGET
SUCCESSIVE TEAMS ATTACK AS TARGET ATTEMPTS TO MANEUVER OR ESCAPE.
TARGET
TARGET
TARGET
ONE OR MORE TEAMS MAY ASSAULT TO ENVELOP OR DESTROY THE TARGET.
TARGET

Figure D-15. Box Formation (Destruction Ambush).

APPENDIX E. ACRONYMS

A&S. . . . . assault and security

CIT . . . . . counterintelligence team

EOD. . . . . explosive ordnance disposal

ITT. . . . . interrogator-translator team

MAGTF. . . . . Marine air-ground task force
MEDEVAC. . . . . medical evacuation
METT-T . . . . . mission, enemy, terrain and weather, troops and support available

NBC. . . . . nuclear, biological, chemical
NCO . . . . . noncommissioned officer

OTL. . . . . overserver-target line

RCA. . . . . riot control agents
ROE. . . . . rules of engagement

SMAW . . . . . shoulder-launched multipurpose assault weapon
SMEAC. . . . . situation, mission, execution, administration and logistics, and command and signal
SOP . . . . . standing operating procedures
SPOTREP . . . . . spot report

TTP . . . . . tactics, techniques, and procedures

APPENDIX F. REFERENCES

Joint Publication (JP)

1-02 DOD Dictionary of Military and Associated Terms

Fleet Marine Force Manual (FMFM)

6-5 Marine Rifle Squad (proposed MCWP 3-11.2)

Marine Corps Warfighting Publications (MCWP)

3-15.3 Scout Sniping (under development)

3-35.3 Military Operations on Urbanized Terrain (MOUT)

3-41.2 Raids (under development)

Marine Corps Reference Publications (MCRP)

2-15.3A Reconnaissance Patrol Leader's Planning Handbook (under development)

2-15.3B Reconnaissance Reports Guide

3-02C Water Survival Handbook (under development, currently exists as Fleet Marine Force Manual 0-13)

5-12A Operational Terms and Graphics

5-12C Marine Corps Supplement to the DOD Dictionary of Military and Associated Terms